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THE LOWENFELD MOSAIC TEST

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MARGARET LOWENFELD
M.R.C.S., F.R.C.P.



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TABLE OF CONTENTS

PREFACE

INTRODUCTION

PART 1 – DESCRIPTION OF THE TEST

CHAPTER ONE – ORIGIN, NATURE AND ADMINISTRATION OF THE L.M.T.

1. Origin and history of the test	page 31
2. Principles underlying the composition of the test	32
(i) Shapes	32
(ii) Colours	33
(iii) Size and thickness of the pieces	34
(iv) Number of pieces	34
(v) Material of the pieces	36
3. Components of the test	38
(i) The box	38
(ii) The tray	38
(iii) The paper	39
4. Record and reproduction of responses	39
5. Administration of the test	39
6. Procedure for evaluation of responses	41
7. Modifications of standard administration	41
(i) In the study of children	41
(ii) In the study of normal adults	42
(iii) In the study of neurosis	42
(iv) In the study of mental disease	43
(v) In use in industry	43
(vi) In anthropological studies	44
8. The training of the tester	44

CHAPTER TWO – GENERAL PRINCIPLES OF CLASSIFICATION: I. REPRESENTATIONAL AND CONCEPTUAL DESIGNS

1. Introduction	page 47
2. General principles of classification	48

3. Definition of Design and Pattern	50
4. Classification of Representational Designs	50
(i) The Kite, Fox and Rhinoceros Reactions	51
(ii) Direct representation of external objects	53
(iii) Use of natural objects to form decorative Designs	56
(iv) Representation of phantasy or symbolic figures or scenes	57
(v) Bizarre Representational Designs	59
5. Individual characteristics of Representational Designs	59
(i) Movement	59
(ii) The use of colour	60
(iii) Skill	61
6. Conceptual Designs	64
7. Planning in Representational and Conceptual Designs	65

CHAPTER THREE - GENERAL PRINCIPLES OF CLASSIFICATION: II. ABSTRACT PATTERNS WITH RECURRING FORM

1. General considerations and definitions	page 68
(i) Definition	68
(ii) The Form of Patterns	69
2. Mode of use of the pieces	70
3. Classification of successful Abstract Patterns with Recurring Form	70
GROUP ONE: Single Patterns placed free within the area of the tray	71
(i) Fundamental Patterns	71
(ii) Patterns that take the form of recognised geometrical figures	72
(iii) Non-geometrical forms	75
(iv) Handed or Diagonal Patterns (not in the Record Form)	77
GROUP TWO: Patterns with relation to the edge of the tray	77
(i) Edge Patterns	77
(ii) Frame Patterns	77
(iii) Corner Patterns	80
(iv) Pendant Patterns	80
GROUP THREE: Patterns that are essentially related to the edge and make use of the whole area of the tray	80
(i) Compact Patterns	81
(ii) Intermediate Patterns	83
(iii) Spaced Patterns	83
GROUP FOUR: Collective Patterns	83
4. General characteristics of Patterns with Recurring Form	85
(i) Skill	85
(ii) Planning	85
(iii) Use of Space in relation to Pattern	86
(iv) Use of colour	87
(v) Movement	89
(vi) Expression of emotion	90
(vii) Supersymmetry	91

5. Asymmetrical Patterns	91
6. Three-dimensional Patterns	91
(i) Superimposed Patterns	92
(ii) Layered Patterns	92

CHAPTER FOUR – GENERAL PRINCIPLES OF CLASSIFICATION: III. ABSTRACT PATTERNS WITHOUT RECURRING FORM

1. General considerations	page 93
2. Patterns that are related to the whole area of the tray	94
(i) Multiform Patterns	94
(ii) Composite Patterns	96
(iii) Diffuse Patterns	98
(iv) Collective Patterns	98
3. Single Patterns placed freely in the area of the tray	98
(i) Slab Patterns	98
(ii) Designed Slab Patterns	99
(iii) Simple Slab Patterns	101
(iv) Colour in Slab Patterns	101
4. Incoherent Patterns	102
5. Three-dimensional Patterns	103

PART II – THE USE OF THE TEST

CHAPTER FIVE – THE USE OF THE L.M.T. IN THE STUDY OF CHILDREN (with two tables)

1. Introduction	page 105
2. General study of development in children as reflected in the L.M.T.	107
(i) Preliminary considerations	107
(ii) Children under five years old (Stages 1 to 8)	110
(iii) Five year old children (Stages 9 and 10)	120
(iv) Six year old children	122
(v) Children aged seven to fourteen	124
3. Studies of individual development in three children	132

CHAPTER SIX – THE USE OF THE L.M.T. IN THE STUDY OF SUB- NORMAL INTELLIGENCE

1. Introduction	page 136
2. The L.M.T. and the factor of intelligence	137
3. Abstract Patterns: Form	139
GROUP ONE: Scattered pieces, loose groups and wavering lines	139
GROUP TWO: Pairs and edge groupings	140
GROUP THREE: Fundamental Patterns	141

GROUP FOUR: Collective Patterns	141
GROUP FIVE: Elaborated Fundamentals	142
GROUP SIX: Slabs	142
GROUP SEVEN: Single Patterns	142
GROUP EIGHT: Patterns covering the tray or making use of the whole area of the tray	143
GROUP NINE: Well integrated Popular Patterns	143
4. Abstract Patterns: Colour	143
5. Representational Designs	144
6. Problems	145
(i) The factor of maturation	145
(ii) The problem of neuresis	146
(iii) The problem of differential diagnosis	146
(iv) The problem of excellent Designs	147
(v) The problem of anti-social individuals	147

CHAPTER SEVEN -THE USE OF THE L.M.T. IN THE STUDY OF NORMAL PERSONALITY

1. General considerations	page 149
2. Analysis of the attitude of the subject	153
(i) Attitude to the test material	153
(ii) Attitude to his Design	155
3. General study of Designs	156
(i) Assessment of the physical qualities of the Design	156
(ii) Assessment of the relation of the Design to the space of the tray	159
(iii) Classification of the Designs	160
4. Detailed study of the Designs: Abstract Patterns	160
(i) Centralised Abstract Patterns	160
(a) Compact	160
(b) Intermediate	174
(c) Spaced	175
(ii) Significance of the standard categories	177
(iii) Some particular characteristics	181
(a) Internal space	181
(b) Movement	181
(c) Three-dimensional features	182
(d) Anthropoid Patterns	183
(iv) Abstract Patterns related to the whole area of the tray	183
5. Detailed study of Designs: Representational Designs	187
6. Detailed study of Designs: Conceptual Designs	190
7. A Design as a self portrait	193
8. Classification of deductions in respect of the L.M.T. and normal personality	195

9. The use of the L.M.T. in the study of specialised problems	198
(i) The question of personal stability	198
(ii) The adaptation of personality to professional work	204
(iii) The study of the family	206

CHAPTER EIGHT - THE USE OF THE L.M.T. IN THE STUDY OF NEUROSIS

1. Neurotic manifestations in responses	page 208
(i) Misinterpretation of the Instructions	208
(ii) Disturbance of the normal relation to the pieces	211
(iii) The commission of errors in the completing of a Design of • which the subject is unaware	213
(iv) Types of error	214
2. Abstract Patterns whose form is associated with neurosis	218
(i) Patterns with a relation to the edge of the tray	218
(ii) Patterns with a relation to the whole area of the tray	221
(iii) Specialised forms of Centralised Patterns	222
3. Intrinsic neurotic qualities in Representational Designs	224
(i) Designs in which the content is neurotic	224
(ii) Lack of cohesion	226
(iii) Incomprehensibility	226
(iv) Distortion	226
(v) Conceptual Designs	226
4. Intrinsic neurotic qualities in Abstract Patterns	227
(i) Very small, simple Patterns	227
(ii) Small Complex Patterns not placed centrally in the tray	227
(iii) Successful Patterns with individual neurotic features	228
5. Colour in relation to neurosis	228
(i) Black	229
(ii) Black and white	230
(iii) Red	230
(iv) White	231
(v) Yellow	231
(vi) Blue and green	231
(vii) Combinations of colours	232
6. Relation of the L.M.T. to psychotherapy	232
7. Other modes of approach to the study of neurosis	237
(i) The time factor	237
(ii) Subject's remarks	237
(iii) Handling of the pieces	238
(iv) Presence or absence of an emotional relation between the subject and the pieces	238
(v) General qualities of the Design	238

CHAPTER NINE - THE USE OF THE L.M.T. IN THE STUDY OF MENTAL DISORDERS

(by Dr Henri Ellenberger)

1. Organic Diseases of the Brain	page 240
(i) Cerebral Arterio-sclerosis	242
(ii) Cerebral Atrophy	242
(iiii) Cerebral stroke with Aphasia	243
(iv) Traumatic Brain Damage	243
(v) Korsakoff's Syndrome	244
(vi) General Paresis	244
(vii) Post-Encephalitic Syndromes	246
(viii) Epilepsy	247
2. Mental Diseases	248
(i) Depressive States	248
(ii) Manic States	251
(iiii) Manic-Depressive Psychosis	254
(iv) Schizophrenia	255
3. The L.M.T. and schizophrenics	257
Degrees of regression in schizophrenics	258
4. Correlations between certain types of response to the L.M.T. and certain clinical groups of patients	266
(i) The Story Reaction	267
(ii) The Delusional Dissociated Reaction	269
(iiii) The Autistic Circle	272
(iv) Artistic geometrical figure made by an advanced schizophrenic	273
(v) Artistic Representational Designs done by advanced schizophrenics	275
(vi) Comment	277
(a) Acute attacks of schizophrenia	277
(b) Schizoid individuals	279
(c) Psychopaths	280

CHAPTER TEN - THE USE OF THE L.M.T. IN THE STUDY OF CULTURAL PROBLEMS

1. Detailed analysis of American and European Patterns	282
2. Discussion of the significance of these differences	302
3. Brief report on Jamaican Designs collected by Dr Kerr	314
4. Discussion of a Manus Pattern	317

CHAPTER ELEVEN - THE PRESENT POSITION 326

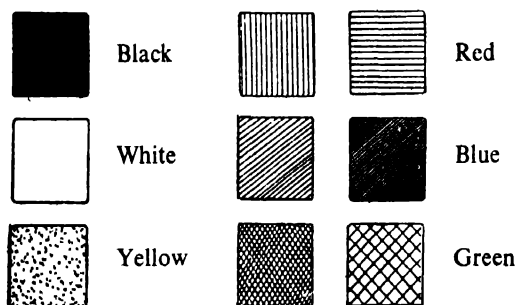
APPENDIX A	Dimensions of the pieces; Instructions up to 1951	333
APPENDIX B	The Tray; Instructions since 1951	335

APPENDIX C	Record Form up to 1954	page 339
APPENDIX D	Modifications of standard techniques in the use of the L.M.T. in the study of non-Western peoples	343
APPENDIX E	Composition of the sets of Mosaic pieces used by other workers	345
APPENDIX F	Stages in the development of teaching	347
BIBLIOGRAPHY		348
INDEX		350
ILLUSTRATIONS	The 144 coloured illustrations reproduced as individual plates are uniform in size with the book and issued in a separate container.	

LIST OF FIGURES

FIGURE 1	Fundamental Patterns	page 36
FIGURE 2	Fundamental Patterns	37
FIGURE 3	Rhinoceros	53
FIGURE 4	Gallopig Horse	56
FIGURE 5	The word 'SHIP' and a steamer	57
FIGURE 6	Collective Linear Patterns	75
FIGURE 7	Abstract Pattern constructed in four corners with central item	78
FIGURE 8	Symmetrical Pattern in one corner	79
FIGURE 9	Linear movement	90
FIGURE 10	Scattered single pieces (child)	112
FIGURE 11	Wavering lines (child)	113
FIGURE 12	Collective Prefundamental Patterns (child)	117
FIGURE 13	Elaborated Fundamental	123
FIGURE 14	Ice cream sandwich	205
FIGURE 15	Drawing of a cat by schizophrenic patient	266

The key to the colour of these figures is as follows:



LIST OF COLOUR PLATES

- | | |
|---|--|
| 1 Fox | 41 Collective |
| 2 A house seen in perspective | 42 Objective Experimental |
| 3 A castle in perspective | 43 Collective (circular variations) |
| 4 The lovers | 44 Collective (varieties of Defined Central Space) |
| 5 A simple boy | 45 Supersymmetry |
| 6 The Edwardian father | 46 External Whirling |
| 7 Four flowers | 47 Internal Whirling |
| 8 A car on a road | 48 Double Whirling with Hollow Centre |
| 9 A sailing ship | 49 Asymmetrical |
| 10 Miner's pick, a candle and a ship | 50 Superimposed |
| 11 Decorative Design of water-lilies and birds | 51 Am-type Multiform Female C |
| 12 Phantastic scene with tree, snake, well and bird of ill omen | 52 Am-type Multiform Female A |
| 13 Two men and an animal from planet Venus | 53 Am-type Multiform Male |
| 14 Mercury running like hell | 54 Eu-type Multiform (Dane) |
| 15 Lads doing exercises | 55 Eu-type Multiform (Argentinian) |
| 16 Speed | 56 Eu-type Multiform (English girl) |
| 17 A house on fire | 57 Am-type Composite Diagonal |
| 18 Order and disorder, harmony and disharmony | 58 Am-type Composite Growing |
| 19 What the army means to me | 59 Eu-type Composite Centred |
| 20 Liverpool Cathedral, the sun, rain and the slums | 60 Eu-type Composite Pendant |
| 21 Longing | 61 Am-type Composite Experimental |
| 22 Circle | 62 Eu-type Large Slab |
| 23 Star | 63 Am-type Composite 'neurotic' |
| 24 Square | 64 Am-type Diffuse |
| 25 Large Triangular | 65 Designed Slab |
| 26 Tri-radiate | 66 Designed Slab |
| 27 Triangular Tangential | 67 Designed Slab with Interior Space |
| 28 Small Oval | 68 Designed Slab |
| 29 Large Oval | 69 Slab made by British child |
| 30 Growing | 70 Am-type Slab; study in colour |
| 31 Winged | 71 Study in colour made by British architect |
| 32 Simple Cross | 72 Scattered groups of pieces |
| 33 Elaborated Cross | 73 First Stage Edge Pattern |
| 34 Repetitive | 74 Second Stage Edge Pattern and Kite Reaction |
| 35 Irregular | 75 Pairs |
| 36 Unusual | 76 Pieces used as drawing materials |
| 37 Empty Frame | 77 Successful and Unsuccessful Fundamental |
| 38 Pendant | 78 Primitive groupings covering tray |
| 39 Pattern covering tray | |
| 40 Intermediate Pattern essentially related to area of tray | |

- 79 Lines filling tray
- 80 Collective including Fundamental and Elementary Original Patterns
- 81 A station; Elementary Representational
- 82 Proliferated Fundamental Pattern
- 83 Black and white and perspective
- 84 A wheel with stakes in it
- 85 Card House type
- 86 Series A 1
- 87 Series A 2
- 88 Series A 3
- 89 Series B 1
- 90 Series B 2
- 91 Series B 3
- 92 Series C 1
- 93 Series C 2
- 94 Series C 3
- 95 Collective of Fundamentals made by a subject of sub-normal intelligence
- 96 Winged made by subject of sub-normal intelligence
- 97 Wee sweetie shop and a stop sign made by subject of sub-normal intelligence
- 98 Abstract Pattern containing an animal form not realised by maker
- 99 Spaced Centre
- 100 Representational scene
- 101 Compensated Winged
- 102 Collective Dissociated
- 103 Abstract Pattern indicating developing stress
- 104 Growing Pattern indicating limitation in ability
- 105 Representational Design made by one of two sisters
- 106 Representational Design made by the other sister
- 107 All over tray Abstract Pattern where pieces have got out of control (adult)
- 108 Frame and Item; pieces out of control (child)
- 109 Unsuccessful all over tray
- 110 Unsuccessful central Pattern with Edge
- 111 Representational Design with omission of an essential feature
- 112 Collective Representational of little boy and potty
- 113 Anthropoid Abstract Pattern showing phallus
- 114 Figure with defective head
- 115 Flower and leaves showing resolution of Plate 109
- 116 Showing progress under treatment (1)
- 117 Showing progress under treatment (2)
- 118 Showing progress under treatment (3)
- 119 Showing progress under treatment (4)
- 120 Windmill; unsuccessful
- 121 First stage of Plate 35
- 122 Slab made by a child, indicating depression
- 123 Black and white Repetitive Design made by a Belgian child with reading difficulties
- 124 Unsuccessful Fundamental indicating cerebral disease
- 125 Unsuccessful cross
- 126 A firework
- 127 A falling star
- 128 Self portrait; broken cross and *berceau*
- 129 The Tree of Life
- 130 A gentian
- 131 Scattered pieces with bread crumbs
- 132 Pairs made by psychotic patient
- 133 Wavering lines made by psychotic patient
- 134 Incomplete Hexagons
- 135 Elaborated Hexagons
- 136 Unrecognisable Representational Pattern called 'a cat'
- 137 Little room; unrecognisable
- 138 Fundamental Patterns used symbolically
- 139 Empty circle and a wall
- 140 Pine tree under snow
- 141 Pattern made during stupor
- 142 Unsuccessful Pattern made by schizoid individual
- 143 Collective Pattern made by Jamaican child
- 144 Design made by young Admiralty Islander (Manus)

PREFACE

The purpose of this book is to break new ground in the study of personality. It describes the origin, nature and use of a test of personality which differs from those at present in use somewhat in the way in which a clinical psychiatric examination differs from a projection test. In a projection test the material obtained during testing can only be understood after its analysis has been compared in detail with complex standard tables and the skill and experience of the tester appears in his ability to translate the resultant formulae into a description of a living personality. This is, as it were, a 'delayed action' result. In a clinical examination, on the other hand, the personality, knowledge, skill and experience of the psychiatrist come into play the moment the interview begins; the quality of the material it brings to light is dependent upon his knowledge and skill, and the report he writes is a direct summing up of the impressions of the whole interview. This may be called a 'direct action' result.

The test described in this book resembles more closely the second rather than the first type of procedure. Its approach to the study of personality is direct in that what is required from the subject is a spontaneous and creative use of brightly coloured material which is available in sufficient quantity to allow of unrestricted choice. The behaviour of the subject, the mode of construction of the resulting design and his comments upon it, all form part of the total response. The design made by the subject together with his whole attitude to the test is then directly evaluated by the tester.

Owing, however, to the fact that the materials of the test are highly structured and that the uses made of them have been studied for twenty-five years in an exceptionally wide range of subjects, the response made by the subject, though entirely spontaneous, nevertheless inescapably registers facts, not only about the subject's personality, but also about his power to perceive and manipulate accurately objects of defined shape. The test is capable, therefore, of providing exact information as to the stage of development or the degree of

Preface

disturbance of perceptual powers in cases of amentia, severe neurosis or cerebral disease.

Since the result of the test is evaluated directly, successful use of this test requires somewhat the same qualities in the tester as those needed for the successful conduct of a clinical psychiatric interview: that is to say intimate knowledge of and experience with the materials used in the test, so that responses become automatically classified in the mind as they appear, and patience, thoroughness and skill in the subsequent analysis of all aspects of the subject's responses.

This book is both a description of the test itself and a summary of the experience gained through its use by a number of collaborators in a number of different fields over a period of twenty-five years. The author alone is responsible for the classifications, the terms used and the general conclusions drawn; but only the co-operation of generations of students and staff at the Institute of Child Psychology, London, has made possible the work itself or the description of it in this book. In this sense the book is a corporate effort.

The fact that the Institute of Child Psychology is an Out-Patient Clinic for the treatment of children from infancy to late adolescence, of which the author is the Founder and the Psychiatric Physician-in-Charge, has inevitably given a bias to the development of the test in the direction of clinical psychiatry and psychology. But the co-operation from early days of Dr Madeline Kerr and Miss P. M. Traill in the use of the test for the study of normal individuals, and of a host of other individuals in other countries who have worked with the test and generously communicated their results to the author, has made possible the extension of the work into fields far outside clinical child psychiatry. A further extension of experience has been obtained from the author's private practice as a psychiatrist, and from experiments conducted with the staff of the I.C.P. and other psychologists in educational psychology. From the spring of 1950, when the author was invited by Dr Margaret Mead to act for a period as Consultant to Columbia University Research in Contemporary Cultures in New York, a further field of research into the possibilities of the test was opened up by the discovery of significant differences between a certain proportion of responses found in the U.S.A. and the responses found in west European countries. These differences answered the original question from which the design of the test arose, as to the

Preface

possibility that the varieties in the traditional forms of folk embroidery and design in Europe might reflect and might have developed from essential differences in the cultural structure of the countries in which they occur; but out of the discovery of the differences between American and European responses has developed a widening of the field of the scope of the test to anthropological field-work. A preliminary report of some of the results so obtained up to the date of writing have been embodied in Chapter Ten, but much material waits for later evaluation.

Publication of results and detailed descriptions of the classifications into which responses fall has been deliberately delayed until sufficient evidence had accumulated to establish the reliability of those classifications and to make sure that all the material so far assembled can be shown to fall within them. The book therefore presents the description of an instrument which is now ready for use for statistical investigations.

Owing to the difficulties that the European mind finds in assessing the processes at work in the production of certain types of American patterns, description of scoring methods has been deliberately withheld until adequate information on this point becomes available from American workers.

A book of this kind must therefore confine itself to providing a description of the basic principles of the test in sufficient detail to enable workers who are unfamiliar with the test to master its use, and no attempt has been made to present statistical evaluations.

Supplied in a separate cover will be found 144 coloured plates illustrating the designs described in the text. Although it might appear at first sight that these, together with fifteen figures in the text itself, should be sufficient to cover the whole range of possible responses, they do in fact only illustrate the basic classifications of response. Great care has been exercised in the selection of the illustrations so that they may present not the most interesting or aesthetically satisfying examples of response, but those which most directly illustrate the basic classifications described in the text. Little conception therefore is given by them of the richness and variety of effect, regarded from the aesthetic point of view, which can be achieved by this material.

In supplying the illustrations separately from the book the objective has been to make possible careful comparison of plate with plate

Preface

as the descriptions arise in the text. A list of all the illustrations referred to in any one chapter will be found at the head of that chapter. A complete list of the plates is included both in the Table of Contents of the book and in the envelope of plates.

The illustrations are in the main drawn from British collections, but as far as is practicable examples have also been included from other countries*. We are particularly grateful to Dr Margaret Mead and Mrs Lenora Schwartz for permission to include the reproduction (Plate 144) of a Pattern from a collection made by Mrs Lenora Schwartz during Dr Mead's 1953-4 expedition to the Admiralty Islands. Our thanks for help in the supply of illustrations are due to Miss V. Andersen of Denmark, Dr Dellaert and his colleagues of Antwerp, Miss R. Douglas of Barcelona, Dr H. Ellenberger, late of Schaffhausen and now of the Menninger Clinic, Topeka, Kansas, Dr Gosta Harding of Ericastftelsen, Sweden, Dr Claude Kohler of Lyon, France, Dr B. J. Kouwer of Utrecht, Holland, Dr Ursula Stewart and Dr Reiman of the U.S.A.

The illustrations from British subjects have been assembled from so many sources as to make individual acknowledgment impossible, but we would like particularly to thank the Royal Scottish National Institution, Larbert, for their help in assembling responses from residents in their Institution, Dr Kerr and Dr Ellenberger for permission to reproduce examples from their collections, and Miss Mniszek and Miss Edwards for help in the collection of designs from school children.

Our thanks are very specially due to Miss M. Boucher, Miss V. Andersen, Miss E. Kotschnig and Dr M. D. Vernon, for their assistance in the preparation of Designs for reproduction, and to Mr P. I. Painter and Mr J. Hood-Williams for help in reading proofs. The author would particularly like to express her gratitude to Dr M. D. Vernon, Mr P. I. Painter and Dr Madeline Kerr for their indefatigable patience and kindness in constructive criticism and help throughout the preparation of the book; to Professor Firth for his suggestion of the terminology of Am-type and Eu-type Designs and to Dr Margaret Mead and Dr Ruth Landes for advice and help in the

* A film of instruction in the test was produced in 1951 and is obtainable from Sifa (London) Ltd, 36-8 Southampton Street, London, WC2.

Preface

design and writing of the description and evaluation of non-European responses.

Thanks are also due to Mr Gerald Eppenreich and Mrs May D. Lee of the Menninger Foundation for help in reading and correcting the English text of Chapter Nine, to Miss V. Andersen for help in preparing the text for the printer and we would like to express our appreciation of Mr James Champion's help in devising a practicable way of reproducing the designs. Thanks are due to Dr Erik Erikson for permission to include quotations from *Childhood and Society*, to Dr Mead for permission to quote from *Male and Female* and *The American Character*, to Dr T. L. McCulloch for permission to quote from his paper on *Use of the Lowenfeld Mosaic Test with Mental Defectives*, in the Am. J. Ment. Def., LIII, 1949, and to Mr Johnson for permission to include a reference to the article on the test which appeared in *Building*.

INTRODUCTION

Illustrations referred to in this section in the order* in which they occur:
Plates 100, 128, 140.

In recent years the question of tests of human abilities and of human personality has come increasingly to occupy the attention of psychologists and psychiatrists. Interest in the possibilities of accurate assessment of the qualities of human beings reflects a demand on the part of the public for assistance in problems of education and of the recruiting and placement of personnel in the armed forces, in higher education, and in industry.

This demand by certain sections of the public that psychology shall assist them in their practical problems, parallels a need which has developed within psychological medicine for a means of detection and assessment of neurotic and psychotic factors in individuals who present themselves for treatment.

It is in response to this situation that during the past two decades a large number of tests have been devised to provide tools for the achievement of three goals; (a) to increase our understanding of the nature of intelligence and the processes of learning, and the relation of these to education; (b) to make it possible to predict whether or not normal individuals applying for posts or undertaking courses of study will be successful; (c) to differentiate between normal individuals and those suffering from neurosis and psychosis, and to assist in the diagnosis and understanding of the latter conditions.

These tests can in the main be divided into two groups: procedures which isolate and bring into play certain definite elements of personality, or physiological behaviour allied to personality; and procedures in which standardised but general stimuli are presented to the subject in order to arouse in him phantasies which are reported in words. Such phantasies, it is held, reflect the intellectual and imaginative capacities of the subject, his psychological approach to

Introduction

problems, the degree of control which he exercises over his experiences and actions, and his emotional stability and balance.

Both types of test register the reactions of the subject at a given moment in his life; both types require the presence and the co-operation of a highly skilled psychologist on whose time the assessment of the results of the test make considerable demands.

It is no doubt possible for the tests to be repeated. But the intention of the test procedure is to achieve a detailed picture of those aspects of personality involved in responses to the test, both in their basic aspects and as they manifest themselves at the moment of testing. The fundamental concept of the first type of test is the creation of a specific test providing specific information; and in the second, the provision of a standard stimulus capable of giving rise to the widest possible range of responses.

The first type of test, for example those described in Eysenck's *Dimension of Personality*, gives rise to specific and limited responses related to specific human abilities which permit of measurement and statistical evaluation. Responses to the second type are non-specific and relate to broader aspects of human personality, which must be interpreted in accordance with standardised patterns of response to the test whose meaning has been evaluated in relation to rating criteria.

Valuable as is the mass of information obtainable through the use of these techniques, there is one aspect of the study of personality which they do not touch. This relates not to the capacities of a particular individual, nor to the anxieties and insecurities he feels, but to the manner in which he will tend to behave in ordinary and extraordinary circumstances. That is to say how will the forces inherent in his personality interact when he is faced with a new situation, and what response to such a situation will he actually make?

It was this problem that, during the last war, led to the design of the 'leaderless group' technique, the aim of which was to discover what the behaviour of selected individuals would be in relation to a group of men under stress. The experience gathered by this technique among resistance movements in several countries, and in the behaviour of ordinary men and women under extremes of stress during the Nazi rule, raises in an acute form a problem which might be stated as follows: 'What are the factors in terms of personality struc-

Introduction

ture that determine the use an individual will make in practical life of the power and abilities he possesses? When under stress, will he or will he not develop hitherto unsuspected qualities?'

Both psychiatry and psychology in recent years have become so absorbed in problems of disturbance of personality that comparatively little attention has been given to studying the potentialities inherent in normal personality. Yet the rapidly changing circumstances of modern life make it increasingly urgent that some means should be found for a quick estimation of those elements of personality that have a bearing upon the practical aspects of life. One of the major characteristics of modern life is the paradox it presents. On the one hand increasing standardisation demands increasing ability to function successfully within standardised procedures; on the other hand, the pace and fluidity of modern conditions stimulate imaginative responses to practical needs, the development of which in earlier conditions would have been impossible. The design of the City of Chandigarh in northern India is such an example. However, such responses to modern possibilities are as yet only too rare.

We need therefore to supplement the tests that we have by others that will provide both a means of assessing the ability of different individuals to make a creative use of standardised material, and an indication of how they will respond to new situations. Such tests need to combine the possibility of accurate measurement with opportunities for creative expression, and they need to be carried out in a medium of which the subject has had no previous experience. A parallel is to some extent provided by the phenomenon of language in which a mastery of grammatical structure and a fluidity in the use of syntax are equally essential for adequate expression. When completed this expression can be assessed in accordance with either of these aspects.

The present volume is the description of an instrument designed to offer possibilities of this nature. Its use over a period of more than twenty years, with people of many kinds, suggests that it may eventually provide answers to some of the more pressing problems, both human and cultural, that confront us.

The test consists essentially in the provision for the subject's use of a large number of brightly coloured, discrete materials of exact definition and shape, together with an area, the size and shape of

Introduction

which is also defined, upon which the pieces must be placed, and in relation to which their disposition must be designed. This material resembles the Rorschach cards in being specific; but the response to it is active in that something is required to be *done* with the materials of the test; to what use they are actually put is left entirely to the decision of the subject.

It has been found from experience that the test materials are attractive to all types of individuals, even to young children and deteriorated schizophrenic patients. A very wide range of responses has therefore been observed from the mere handling and examination of the individual pieces to the construction of highly complex and sophisticated designs of many types. It might be thought that such designs could relate only to the artistic or to the puzzle-solving aspects of personality and must vary according to time and mood. But in the case of stable personalities, study of a series of designs made by the same individual on different occasions, and even at odd intervals over a number of years, reveals a remarkable stability. It is much to be regretted that limitations in the number of illustrations to this volume makes it impossible to reproduce such a series, but a hint of this stability of recurring pattern will be found in Chapter Five in the developmental series of children's patterns there recorded.

It might seem probable that the diversity of designs and patterns that would result from the use of such materials as are described in this book would be too great to make analysis possible. On the contrary, prolonged study of these results has shown that they are capable of very exact classification, definition and analysis.

Since what is called for in this test is action, and since the objects which are manipulated in this activity are identical for each subject, the use made of these by one subject is directly comparable to that made by another, and its similarities and differences can be recorded. When studied in detail, it is found that these similarities and differences correspond with definite characteristics inherent in the individual. In addition, problems of perception and of imaging, as well as problems of conation, imagination and adaptability, can be studied with these tools, and the results can be described in terms of the subject's actual behaviour; the use of the test materials becoming in this way a miniature reality situation.

Introduction

Experience with the test has shown that it has a number of advantages: it has proved to be attractive to all types and ages of subject; the designs made with it are susceptible to detailed classification and exact analysis; the designs can be recorded and the records kept; a group of workers can see and work on the designs together; and the procedure can be repeated an indefinite number of times with any subject, either at long or short intervals of time, with minimal demands upon the psychologist. The analysis of a very large number of responses obtained in several different cultures has shown a close correspondence between the characteristics of the test designs and the patterns of behaviour shown by the subjects in the practical aspects of their daily lives; definite and describable varieties of design have been found to appear in neurotic or psychotic subjects; and finally, a series of designs made by the same subject during the process of psychotherapeutic treatment closely parallels and throws light upon the clinical development of the case.

Not only do the designs of mature and normal subjects show, on analysis, characteristics which can be verified by study of their actual behaviour in ordinary life, but also in certain cases evidence of a coming breakdown can be detected a considerable time before it actually occurs. Certain qualities of designs give valuable evidence in problems of differential diagnosis of various aspects of mental disease, as will be illustrated in Chapter Nine.

It is the double nature of the test material that gives rise to these possibilities. On the one hand it is exact in nature, its successful employment necessitating that certain psycho-physical qualities in the subject should be intact; on the other hand the creative possibilities of the material are almost unlimited. But as already stated, although the number of designs to be made with the material are potentially unlimited, they are strictly classifiable, and it is on detailed knowledge of the forms of Design which have so far become familiar that analysis of individual Patterns is based.

In regard to the potentialities of expression latent in the test, a very interesting observation has been made by several experienced psychiatrists: namely, the variation in the depth and intensity of the experience expressed by the subject through the material. Here a very real parallel is found with the subjective experiences which accompany the major art forms. Many responses to the test are ex-

Introduction

cuted on a superficial level, the subject being primarily interested in the intricacies of the task; but from time to time, in certain classes of subjects, the materials provide a release of energy resulting in an effect comparable to that of successful artistic creation; an effect, moreover, which the subjects have no other means of achieving. The intimacy of expression that results may amount at times to dramatic self portraits, such as those shown in Plates 100, 128 and 140, which give a vivid picture not only of the situation in which the maker feels himself to be but also of his subjective evaluation of this situation. From this point of view the subject's use of the materials of the test resembles more a language than a test. The work of Susanne Langer* has made it easier to understand how modes of expression other than verbal language may also be essential functions of the mind, and it is this quality of expressiveness that impresses many subjects about the L.M.T. In a number of cases both children and adults have put this into words, stating that with this material one can 'say something', and when the test materials were available they have used them to express something which they felt to be important but which they had been entirely unable to put into words. The designs which result can also at times reveal to the psychologist or psychiatrist qualities in the subject which have been previously unsuspected.

For some twenty years the test was used mainly in Great Britain and in certain continental countries, interest in the test beginning in the U.S.A. during the 1939-45 war. In 1950 the writer visited the U.S.A. and so had the opportunity to examine designs collected in that country during the war. This examination revealed the unexpected fact that definite differences were observable between the designs obtained in Britain and Europe and certain of those collected in the U.S.A. These differences are described in Chapter Four and their possible significance is discussed in Chapter Ten of the present volume. Differences of another kind have come to light through a comparison between the designs collected by Dr M. Kerr in Jamaica and those previously obtained from European children. A possible explanation for these differences is considered in the latter part of Chapter Ten. At the end of this chapter will be found a short descrip-

* SUSANNE LANGER *Philosophy in a New Key* (Harvard University Press, 1942).

Introduction

tion of material of a different kind collected recently by Dr Margaret Mead's team of field workers in New Guinea.

Hitherto the main obstacle to the presentation and description of the test has been the nature of the responses, since they cannot be described in words and can only be properly understood if they are reproduced in colour. This is a very costly process. It is for this reason that a detailed description of the test and the publication of the results has been delayed. This delay has had two results. On the one hand so much is now known about the test, and its use has been developed to cover so many aspects of testing, that in the present text only the basic aspects can be presented, and owing to limitations on the reproduction of designs, only those can be included which are typical of one or other fundamental aspect of the test. On the other hand the test has proved so delicate an instrument, and capable of registering so many aspects of personality and of cultural behaviour that gaining a mastery of the knowledge we have so far obtained is quite a formidable process. The difficulties which will be experienced in learning to use the test are of two kinds. The first lies in its departure from the modes of assessment in current use. The results are capable neither of statistical assessment nor of verbal evaluation in the current terms. For those therefore to whom verbal and statistical assessment are synonymous with the acquisition of accurate knowledge about a complex phenomenon, the L.M.T. cannot fail to be an irritation. There are very good reasons for this. It is awkward to work with a test whose findings it is difficult to compare directly with the findings of other tests; and while the flexibility of the L.M.T. increases its scope of application, it does at the same time demand from its users a different type of discipline from that customarily demanded by tests. The second difficulty is this. The L.M.T. is a visual test, and the process by which responses to it are understood can perhaps be described in terms of another science. If the necessary substitutions are made, the following description* of the anthropologist at work illustrates what takes place.

'To the anthropologist trained to surrender to his material, to wait

* MARGARET MEAD *Male and Female* page 45 (London, Victor Gollancz Ltd, 1949).

Introduction

and watch and listen until form emerges from myriad small acts and words of the little group of people among whom he is living such a concentrated existence, the material itself shapes his categories.'

Some people find detailed observation of exact visual phenomena difficult to acquire; for these the patient analysis of mosaic patterns is tedious so that the interpreter of L.M.T. responses is always in danger of falling into the trap of subjective intuitive interpretation. If intuition be added to exact analysis – as for example in the colour-orientated description of Plate 144 – it is a valuable tool; but in the absence of exact analysis and a detailed knowledge of existing patterns of response, it is a dangerous instrument that can easily lead into the bog of superficial analogies that have no real basis, and so bring the test into disrepute. It is in order to avoid subjective evaluation that so little has been said in this book about such relations as that between the forms of pattern which are produced and the possible psycho-analytic interpretation of such elements of design, and for the same reason the scoring methods at one time included in the plan of the book have been withdrawn. What is here described is the basic structure of the test and the modes of analysing its results; and although these are unavoidably complex, it is hoped that enough has been given to make clear the principles upon which deductions from the designs have been made, and to enable those who are interested in this approach to gain sufficient knowledge to make their independent use of it possible.

The subject matter is organised as follows: Chapter One describes the origin and nature of the test and the mode of its administration. Chapters Two, Three and Four deal with classification of the range of designs hitherto obtained in the cultures so far studied. Chapter Five is concerned with tracing the process of development in children, mainly as it manifested itself in the use of the test by British children during the pre-war years. In Chapter Six a brief survey is given of the limited knowledge we so far possess of the reactions to the test of individuals of sub-normal intelligence. Chapter Seven describes the information which the test can supply in the study of normal personality. Chapter Eight reviews our knowledge to date of the phenomena of neurosis as shown in response to the test. In Chapter Nine Dr Henri Ellenberger* describes his experience in the use

Introduction

of the L.M.T. in the study of psychoses in a large mental hospital in Switzerland. Chapter Ten examines the cultural differences so far observed in responses to the test, and Chapter Eleven gives a brief account of the present situation in relation to the use of the test in various fields. The Appendices deal with certain technical aspects of the administration of the test and give some historical data.

A Record Form has been prepared for use with this book and can be obtained from Badger Tests Co. Ltd.†

All workers beginning to use the test are advised to obtain a copy of this Form and keep it by them when reading the book since it provides in summarised form a guide to the essential aspects of the test and is useful in memorising these.

...

ERRATA

- 1 Page 22, eight lines from the bottom of the page, should read: 'The experience gathered by this technique *and* among resistance movements in several countries, *of* the behaviour of ordinary men and women under extremes of stress . . .' instead of - 'The experience gathered by this technique among resistance movements in several countries, and in the behaviour . . .'
- 2 Page 35, three lines from the bottom of the page should read: 'Other collections of mosaic pieces have been made by certain workers in the U.S.A.' instead of - 'Other collections of mosaic pieces have been made by a certain worker in the U.S.A.'
- 3 Pages 29 and 40. The Record Form which workers are advised to use (page 29) is NOT that referred to on page 40 and given in Appendix C but is a new Form specifically designed for use with this book.
- 4 Page 233 (Plate 115). We are indebted to Dr Claude Kohler for permission to include this illustration.
- 5 Page 257f. 'Coloured Black Designs' should read: 'Coloured. Block Designs'.

Note: Page 331. Any reader interested in the suggestion made on this page may like to know that the address of The Institute of Child Psychology Ltd, London, is 6 Pembridge Villas, London W.11.

PART I: DESCRIPTION OF THE TEST

CHAPTER ONE

ORIGIN, NATURE AND ADMINISTRATION OF THE L.M.T.

Illustrations referred to in this chapter; Figures in the text: 1 and 2

1. ORIGIN AND HISTORY OF THE TEST

One of the features of European life that perplexes citizens of more uniformly developed continents, is the striking diversity in costume, dance and song to be found in the individual communities throughout Europe. During a festival at the turn of the century in such districts as western Poland, one might see processions of peasants in colourful costumes crossing the flat field-paths leading to the little church on the central hill. Simply from an examination of the arrangement of the colours in the women's dresses, or the exact position of the embroidery on the coats of the men, it was possible to determine to which village each procession belonged. The traditional dances performed at National Festivals now held regularly in London illustrate no less clearly the subtle differences in the cultural life of the various communities. The national embroidery found in the costumes of so many European countries tells the same tale. The basic patterns of form and colour that are shared by peasant communities over wide areas have their own local variations in the individual villages.

After the close of the First World War, the author lived for a time in Geneva, and was led by interest in these facts to wonder whether any way could be found through which such differences could be investigated.

Were these basic patterns of form and colour the expression of creative faculties in these communities from days long past, and were they perpetuated now through force of habit or tradition? Or was some characteristic inherent in the people concerned reflected in

Description of the Test

these creations so that their perpetuation arose out of a relationship between the people and their communal expressions which remains real today?

A study of the embroideries of south-eastern Europe in particular showed that they had a predominance of geometrical forms, and this led the writer to a first tentative experiment with such forms. A manufacturing firm in a central European country was then putting collections of light wooden pieces on the market which were in geometric forms and a wide range of colours, finished with a brilliant glaze. They were delightful to handle and could be obtained in a large variety of sizes, shapes and thicknesses. With a selection of these the first experiments were made.

There was as yet no thought of a tray or of regularity in the pieces. A chance assortment of shapes, colours and sizes was presented to people of various nationalities, and the designs they made with them were recorded.

It soon became clear that something interesting was happening, and it was decided to attempt a standardised assemblage out of this chance collection.

2. PRINCIPLES UNDERLYING THE COMPOSITION OF THE TEST

Four aspects were involved in making a selection among the very large variety of pieces available. There were the shapes, the colours, the thicknesses and the number of pieces to be selected, and each raised a separate set of problems. These were considered in turn.

• (i) Shapes

Very nearly every simple geometrical shape was available and some principle of selection had to be decided upon. The shape that at first seemed the most obvious to use as a fundamental form was the circle, although this appears rarely in embroidery. Experiment soon proved that it would be impossible to get a satisfactory combination of solid circles with any other forms. (Anyone who doubts this can convince himself of its truth by making the attempt.) The circle was therefore rejected. A square proved a more satisfactory fundamental form. A diamond or rhomboid is an obviously suitable second shape in com-

Origin, Nature and Administration of the L.M.T.

bination with a square if the length of its side corresponds to that of the square; both appear frequently in European folk embroidery. Together these gave two four-sided figures with an organic relation between them. Studies of the designs of folk embroidery also showed that they made frequent use of triangles and so the square was cut in half and a right-angled isosceles triangle added. This had the additional advantage of making possible the reconstruction of the square from two such triangles. Up to this point three figures had been selected each organically related to the others but making possible the construction only of simple forms. To make more complex forms possible, the hypotenuse of the right-angled triangle was taken as the base for an equilateral triangle and this again divided in two producing a scalene triangle.

The collection of shapes now comprised two four-sided figures, and three three-sided figures; in the case of two of the figures the other pieces could be constructed by doubling the pieces. Since experiment proved that designs of great complexity and variety could be made with this collection, it was adopted as the final form.

(ii) Colours

The shapes chosen were available both in a range of primary and of pastel colours, and here again some principle of selection had to be decided upon. At that time the writer was greatly interested in the work of Mary Boole* and had carried out some experiments on lines suggested by her. Mary Boole's recommendation that the study of colour and form should begin with the jewel colours, matched as nearly as possible to ruby, emerald, sapphire, topaz and diamond, was attractive, particularly as these are colours that have a direct appeal to children. After a good deal of experiment the colours

* Mary Boole was the daughter of George Boole the Irish mathematician. She was an original thinker who pointed out the relation between certain mathematical formulae in their graphic aspect and flower forms. She put forward some suggestive ideas concerning colour-embroidery for children in relation to conative trends such as the curve of pursuit. She wrote a number of small books which are now unobtainable. Before the 1914-18 war the author experimented with the needlework ideas suggested by Mary Boole and became interested in the relations she had pointed out between psychological factors, colour, and certain specific forms.

Description of the Test

finally selected were red, green, blue, yellow, white and black, all in strong clear shades and as nearly as possible corresponding with the colours in the relevant jewels. In order to eliminate the element of suggestion it was decided that each shape should be represented in all the chosen colours.

(iii) Size and thickness of the pieces

There were at this time a large variety of thicknesses of pieces available ranging from pieces of almost paper thinness to pieces three-quarters of an inch thick. A period of experiment with a variety of subjects followed, in order to study the way in which children and adults spontaneously handled the pieces. After a time it became clear that while the majority of people manipulated them as flat pieces, there were some who wished to stand them on edge and felt annoyed and frustrated when this proved impossible. Pieces of a thickness of an eighth of an inch were finally selected, on the grounds that while this would make it *possible* to stand the pieces on edge if the user was determined to do so, no suggestion or encouragement would emanate from the pieces themselves for this use. Many sizes were also experimented with and the final decision made quite arbitrarily to choose that size of square with which medium sized patterns could be made conveniently upon rather larger than quarto sized paper.*

The set as finally composed therefore consisted of squares, diamonds, half-squares, equilateral triangles, and scalene triangles, each in blue, red, green, yellow, black and white, with interrelations of length of sides of the pieces.

When the set was complete, comparison of the shapes and colours with folk embroidery showed that those selected recurred regularly in folk designs and so were considered to form a satisfactory basis for experimentation.

(iv) Number of pieces

Once the shapes and colours had been settled, the knotty point arose as to how many pieces of each shape and colour should be included. Would an unspecified number of pieces of all kinds mixed together in a box form the best material? Or should exactly the same number

* For details of dimensions see Appendix A.

Origin, Nature and Administration of the L.M.T.

of pieces of each shape and colour, arranged in a definite order, be presented to each subject? If so what number of each shape should be included? The question of the best mode of presentation of the pieces had also to be considered.

There are obvious advantages in presenting a box in which all the pieces are mixed together. For one thing this makes for greater ease in handling the test material. But the chance position of whatever pieces happen to be on the top of the collection would inevitably produce an element of suggestion, and moreover this mode of presentation has serious disadvantages especially in work with children. On the one hand the variety and confusion of pieces would tend to be bewildering; on the other it could easily happen that some shapes and colours would not be included in the top layers and would therefore not come to the notice of the child at all. Such variations in the stimulus situation would make impossible any elaborate comparison between the work of different children.

The remaining possibility was to settle upon a fixed number of pieces of each shape and colour to form the material of the test and to decide on the number of each kind of piece to be included. Study of the collections of designs so far obtained made it clear that certain simple forms of pattern tended to recur. When these were analysed they turned out to be the simplest type of symmetrical pattern which could be made with each of the five shapes in turn. Analysis of collections of patterns made by simple people, either children or unsophisticated adults, showed that these forms of pattern tended to appear frequently. These simple recurring designs were accordingly termed Fundamental Patterns (see Figures 1 and 2), since they are the simplest patterns that can be made with each piece and since they also tend to recur constantly as fundamental elements in larger patterns. The final composition of the pieces forming the test material became therefore a sufficient number of each shape in each colour to make possible the construction in each colour of the most characteristic Fundamental Patterns for that shape. Other collections of mosaic pieces have been made by a certain worker in the U.S.A.* in which this essential organic relationship between the pieces, and its importance, has not been grasped.

* See Appendix E

Description of the Test

(v) Material of the pieces

One further change remains to be recorded. When the supply of wooden mosaic pieces available in England before the war was exhausted, it was impossible to replace them because their import ceased at the outbreak of war. It therefore became necessary for the materials of the test to be specially manufactured. Exhaustive experiment under war conditions proved that plastic materials offered the best substi-

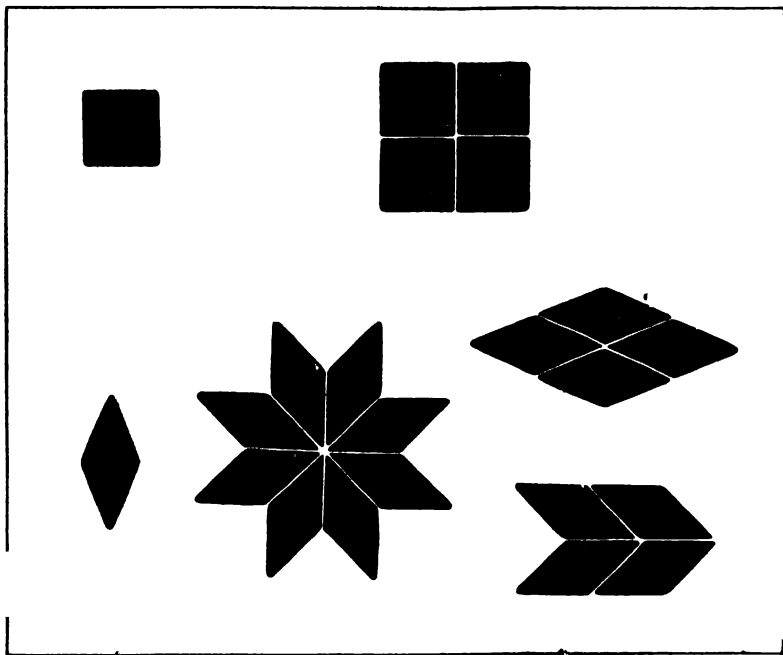


Figure 1: Fundamental Patterns

tute for the original polished wooden pieces. In 1948 therefore independent manufacture of the set in plastic was embarked upon; but owing to the high cost of the new material, the plastic pieces had to be thinner than the original wooden ones. Moreover, whereas the edges of the wooden pieces were slightly bevelled, the plastic edges are vertically cut, and their corners more rounded.

It is still possible but difficult to stand the pieces on their edges and therefore when a subject does this it has a more definite signifi-

cance than with the wooden pieces. The greater thinness of the plastic pieces made it also possible to reduce the size of the box, which now measures 11in. x $7\frac{1}{2}$ in. (double set), an advantage which greatly adds to the convenience of using the test.

The composition of the set now being settled, only one further hurdle remained: how should these 456 pieces be made available to the subject? It proved impossible to display the shapes of the pieces

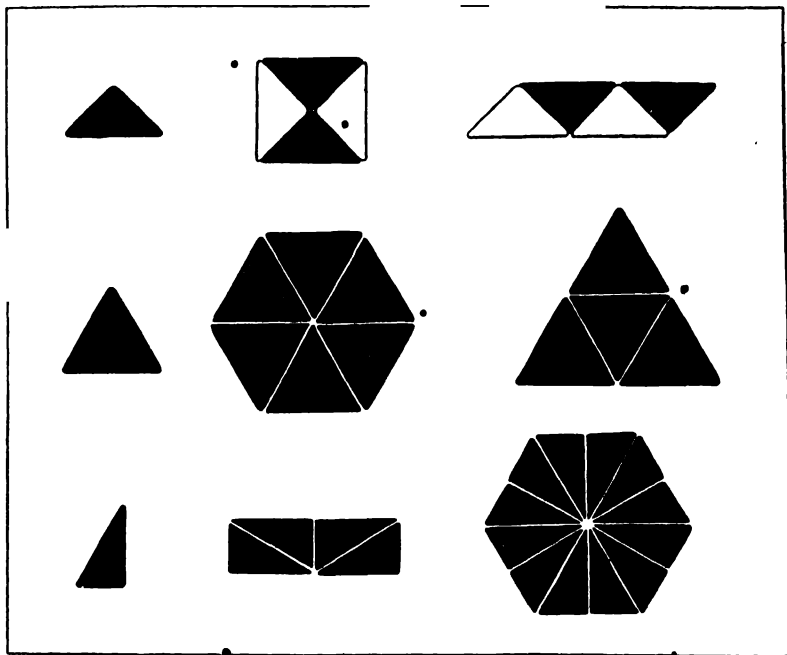


Figure 2: Fundamental Patterns

and at the same time to pack them satisfactorily into a conveniently sized box. In the end therefore pre-eminence was given to an orderly presentation and the pieces were grouped together on edge.

At first the arrangement of the colours of the individual pieces* within the box was indiscriminate but after the writer had visited the U.S.A. in 1950, the formal order of white, green, black, yellow, blue and red, was decided upon.

* See Appendix B

Description of the Test

3. COMPONENTS OF THE TEST

(i) The box

The first component of the test therefore is a box opening on a hinge, within which are :

- 24 squares
- 48 half squares
- 48 diamonds
- 36 equilateral triangles
- 72 scalenes

arranged in rows standing on their edges. In the normal set this number of pieces is duplicated in the long axis of the box, making together 456 pieces.

A final point to be noted is the provision of a single box with a half set of the material for use by those who prefer to work with a smaller selection.

(ii) The tray

During the first years of work, the surface upon which designs were made did not appear to be significant and as a result, some of the earlier and very interesting work is unfortunately now no longer suitable for comparison because the designs were made on pieces of paper of all sizes and shapes. But the experience of carrying large rolls of paper from place to place, and the time required to copy large designs eventually brought home the impracticability of this procedure. Moreover, accurate comparison between large and small designs is difficult if not impossible. The design of a tray which should become the standard for use with the box of pieces was therefore undertaken, although until 1951 the importance of this factor was not fully appreciated. The size and shape of any such tray must of necessity be arbitrary to some extent, but analysis of the material already collected showed that a regular percentage of subjects took as their goal either the covering of the entire surface of the paper with an integrated pattern, or the production of a frame-like pattern that closely followed the edge of the paper. Now owing to the difference in length between the sides of the pieces, it is geometrically impossible to find dimensions for an area which will allow an integrated pattern to be made along the edge with every shape of the available pieces. Since examination of the material available showed that sub-

Origin, Nature and Administration of the L.M.T.

jects chose most frequently to make such patterns with diamonds, isosceles triangles or squares, the area of the first standard tray for use with the original wooden mosaics was therefore so arranged as to allow edge patterns to be made with these pieces (see Appendix B).

(iii) The paper

If designs are to be recorded they must be made on a paper base laid on the tray, but the colour of the paper inevitably affects to some extent the colours used in the designs, and a satisfactory colour is not easy to find.

Theoretically speaking, lightly tinted paper would probably give the best results, but as the purpose of the test is a comparison of the results obtained by different workers in different countries, identically tinted paper is not a practical possibility. White has therefore been adopted as the standard colour, in spite of the fact that the white mosaic pieces do not show up well against this background; but this makes choice of white, particularly when it is the only colour used, of special significance.

4. RECORD AND REPRODUCTION OF RESPONSES

It is obvious that the only completely satisfactory mode of recording is by good colour photography, but since the reproduction of diapositives is prohibitively expensive, this method has a serious disadvantage. Recording of designs is therefore accomplished by tracing round each piece of mosaic with a sharp pencil, starting from the edges of groups of pieces and removing each piece as the tracing is completed. Where pieces lie very close together, although not touching each other, the position of one piece can be fixed by marks made at the corners with the point of a pencil and the piece can then be removed to enable the neighbouring piece to be outlined. This is then removed and the first piece is replaced for its outline to be fitted in. The initial letter of the colour is then written within the space outlined and is later filled in with colour, care being taken to distinguish colours with identical initials, e.g. Bk. for black, B. for blue.

5. ADMINISTRATION OF THE TEST

The basic idea of the L.M.T. is that the subject be presented with an

Description of the Test

ordered collection of mutually related pieces of coloured material (white for this purpose being considered as a colour) and an area of defined shape and size in combination* with which a design is to be spontaneously created.

In the presentation of this material to the subject three things are therefore essential :

- (a) that he should know what shapes and colours are available;
- (b) that all pieces used in demonstrating this to him should be replaced in the box before he begins;
- (c) that the wording of the instructions should be clear.

Up to 1950 these objectives were embodied in the instructions published in *The Mosaic Test* in the *American Journal of Orthopsychiatry* (Volume XIX No. 3). (See Appendix A.) After considerable experience had been gained with the test it gradually became clear that the mode in which the subject reacted to the instructions, the manner in which he chose and manipulated the pieces on the tray, and the comments he had made both on the test materials themselves and on the use he had made of them were almost as revealing as the resulting design. Emphasis therefore came to be laid upon the total response, that is, the whole behaviour of the subject from the moment when the tester completes giving the instructions to the final recording of the design.

A discussion of the main varieties of preliminary responses to the instructions, which will illustrate the importance of this point, has been undertaken in Chapter Seven.

In 1950, at a 'workshop' on the Mosaic Test held in Washington at the Catholic University of America, criticisms of certain points in these instructions were brought forward by American workers, and through discussion with European and American workers a revision of the instructions was undertaken. A revised set of instructions was then drawn up and translated into three European languages. These instructions are now issued with the test materials (see Appendix B).

As no publication had yet been made of the mode of analysis of Mosaic Designs, a Record Form was drawn up in 1951† to facilitate record analysis and comparison of individual designs.

* The significance of this form of words will only be understood after reading Chapter Ten.

† See Appendix C

Origin, Nature and Administration of the L.M.T.

6. PROCEDURE FOR EVALUATION OF RESPONSES

The process of assessment or evaluation of responses to the test divides into three parts: firstly, assessment of the subject's attitude to the test, to his production with the test, and to the material of the test; this is discussed in Chapter Seven: secondly, objective description of that which has been produced by him, which is dealt with in Chapters Two, Three and Four: thirdly, evaluation of the results by the tester, bearing in mind the norms for the particular culture from which the subject comes. The significance of this becomes evident in Chapter Four and is further discussed in Chapter Ten.

7. MODIFICATIONS OF STANDARD ADMINISTRATION

(i) In the study of children

Young children are often unwilling to allow the investigator time to demonstrate the shapes and colours in the box to them, since the bright colours in the box attract them and they are impatient to begin. If the investigator insists that the whole preliminary procedure should be completed before the child is allowed to touch the box of pieces, impatience or distraction of attention may result; in that case it is wiser to modify the technique. If the child being tested is spontaneously interested in the box of pieces and eager to experiment with them, or if he takes up a piece and becomes absorbed in its tactile sensations and unwilling to listen to any further talk, this is evidence in itself and the child should be permitted to proceed. The fact should, however, be carefully recorded, and parallel modifications should be introduced whenever necessary in testing other children of similar age and ability. Another point that sometimes causes difficulty with older children is the tendency shown by some children to work far longer than others on their patterns. Considerations both of a practical and theoretical nature enter here. The decision whether additional time should be allowed depends upon the purpose for which the test is being used. The degree of intelligence of the subject being tested has little relation to the speed of the pattern making, although it may influence the quality of the design.

It is therefore necessary for the investigator to make up his mind clearly as to the goal of his study before this question of additional

Description of the Test

time can be satisfactorily answered. If his goal is to give full scope to the creative impulses of the child, then he must allow the child such time as he feels is adequate to his or her needs, and a halt must be called only when it is clear that such factors as perseveration, or perfectionist ideas are influencing the child's reactions, and that his direct response to the challenge to make a spontaneous design has exhausted itself. On the other hand, to give unlimited time to all children is often not a practical possibility. In that case an arbitrary period should be chosen (which may well be longer than twenty minutes) and adhered to throughout the use of the test. It is possible however to use the test in another way, by assigning a comparatively short period to the test and by adhering rigidly to the exact standard procedure of presentation in order to concentrate on the comparative reactions of the children to the perception of size and shape.

(ii) In the study of normal adults

Tests of normal subjects can be made from two points of view. Individual subjects can either be studied as members of a class, and their productions statistically evaluated; or they can be given opportunity to express themselves fully in the test and the resulting design carefully analysed, simply as a production, according to the principles expounded in Chapter Seven. For example, if the goal of the investigation is to compare the performances respectively of men and women educated at a university, to analyse these statistically, and to compare these results with those of men and women who are manual workers (as is done by Madeline Kerr in her paper on the Validity of the Lowenfeld Mosaic Test) then the standard procedure should be carefully adhered to. If, however, the goal of the investigation is to extract the maximum information about a single individual from one or more designs, according to the principles set out in Chapter Seven, then the time limit should be waived and the subject should be allowed to choose his own time and conditions.

(iii) In the study of neurosis

Speaking generally the L.M.T. is used in the study of neurosis in two ways: (a) as a diagnostic technique and (b) during the process of psychotherapeutic treatment.

In the first use it is unwise as a general rule for the standard instructions to be closely adhered to, since in cases of severe obses-

Origin, Nature and Administration of the L.M.T.

sional neurosis a better result is obtained if the time allowed is extended. Details of administration in the second use depend upon the attitude of the therapist. The L.M.T. can form a most valuable element in psychotherapeutic treatment, particularly since adult patients find it possible to express aspects of their experience in this medium that they cannot realise in any other way. In certain instances therefore the instructions can be altogether waived and the materials of the L.M.T. can be used by the patient much as drawing materials are used in a Jungian analysis.

If, on the other hand, the purpose of the tester is to investigate, define and describe the differences in response to the test of normal subjects and those suffering from neurosis, or to enquire into the presence or absence in subjects living a normal life of those aspects of response to the L.M.T. described in Chapter Eight as 'neurotic', then the conditions of the test for all subjects should be kept uniform.

(iv) In the study of mental disease

As pointed out by Dr Ellenberger in Chapter Nine, very fundamental modifications of the technique of administration have to be adopted when using the test with certain classes of psychotics. Here the goal is the achievement of a response by the patient, and only the experience of the psychiatrist, both with psychotic patients and with the L.M.T., can decide how that can be best achieved.

(v) In use in industry

Between 1939 and 1945 the L.M.T. was found useful in helping to solve industrial problems. But its usefulness and the mode in which the test is administered depends upon the type of problem that is under consideration. In order to make this point clear let us take the single example of testing for work involving speed and accuracy in perception and manipulation of form. If a large number of subjects are to be tested for these qualities, and if it is of practical advantage that the testing time be as short as possible, then the making of one mistake in, say, the use of scalene triangles, is adequate evidence of the unsuitability of the candidate; the test can therefore be stopped the moment this is observed by the investigator. If, on the other hand, the aim of the investigator is to discover candidates with a feeling for design or for the use of colour - as, for example, in

Description of the Test

choosing candidates for a post in a firm of advertisers or interior decorators – then nothing is of importance except the completion of the final design, and a candidate, if he desired it, could well be allowed a very much longer period in which to complete his design.

(vi) In anthropological studies

As explained in Chapter Eleven the L.M.T. is now being used by a certain number of anthropologists as one of the tools for the investigation of primitive and non-Western cultures. In such work the tester would be dealing with a collection of responses from individuals of whose 'norms' of reaction to such a test as the L.M.T. we have as yet no information. In the problem of assessment of responses in such cases the third element in evaluation is of particular importance. As is studied in Chapter Ten, the spontaneous evaluation by an anthropologist of the qualities of any response will inevitably mirror the scale of values implicit in the culture from which he comes. For example, the tester who would himself make an Am-type* Design may tend to regard Compact or 'closed' designs as limited or even indicative of depression, whereas in the same case, a tester who would himself make a Eu-type Design* would more probably tend to regard the same response as showing an increase in integration of personality or in cognitive ability.

It is for this reason that this volume stresses the importance, for those who would use the test, of the acquisition of a technique of objective description in which, for example, the terms Compact and Intermediate would be used as descriptive of designs, rather than such words as 'closed' or 'open' in which a judgement is implicit. In Appendix D a statement will be found of the modifications in the instructions that have been suggested for work in these fields.

8. THE TRAINING OF THE TESTER

As with all tests the best results with the L.M.T. are obtained by those who have the greatest experience with the test. Proper study and development of the test has hitherto been obstructed by an obstacle which arises out of its very nature. If the test is to be soundly

* For definition of these terms see page 69, and also Chapters Four and Ten.

Origin, Nature and Administration of the L.M.T.

used, it is essential for the tester to become familiar with the whole range of responses which can be or have been made to it by different subjects, and this is a task which presents formidable difficulties to a non-visual type of worker. It is often urged against the L.M.T. that it is useless as a test because it is at present unscorable. But to urge this is to misunderstand the whole nature of the test. The essential of the process of scoring is the division of test results into categories already known to the tester, and the purpose of the scoring is that the relative proportions and modes of distribution of these known categories as displayed in the test under examination shall be compared with similar data obtained through the administration to the same subjects of other forms of test.*

But the essential nature of the L.M.T. lies in its use as a tool of exploration. To complete the quotation cited on page 27, by the correct use of it one can 'escape from the bondage of asking only the questions that are based on our own and other known civilisations'*. This is not to say that within the test results of the L.M.T. the familiar categories cannot be discovered, but that these may appear in a different form from that to which we are accustomed and often as a second result after the basic analysis has been carried out, rather than constituting the whole of the information procurable from the test results.

It cannot be too often repeated that an understanding of the L.M.T. is gained through detailed analysis of the structure of the responses in their two aspects; the relation of the subject, as an individual, to the test, as set out in Chapter Seven, and the study of the design made by him. The comprehension of these Mosaic Designs is as difficult for many people as is the learning of histology for the same kind of worker in another field. Here, many students find that their first attempts to see a histological pattern through the lens of a microscope result in failure to see anything at all; only slowly does the histological structure of the microscopic specimen reveal itself. The same is true of the study of mosaic pattern; only slowly does the intimate structure of the pattern become visible to the inexperienced eye.

For this purpose it is essential that colour reproductions of the designs should be available for study. This has hitherto been possible

* MARGARET MEAD *Male and Female* page 45.

Description of the Test

only through direct teaching at the Institute of Child Psychology in London. It is as a remedy that the present book is designed. In the next three chapters a detailed description is given of the main classifications into which these responses fall.

CHAPTER TWO

GENERAL PRINCIPLES OF CLASSIFICATION: I. REPRESENTATIONAL AND CONCEPTUAL DESIGNS

Illustrations referred to in this Chapter in the order in which they occur:

Plates 74, 1, 2, 3, 4, 5, 12, 15, 6, 7 129, 100, 91, 90, 93, 8, 9, 10, 11, 12,
13, 136, 97, 14, 16, 17, 18, 19, 20, 21. Figures in the text: 3, 4, 5.

1. INTRODUCTION

As has been explained in the previous chapter, the interpretation of designs made with the L.M.T. must be based upon a study and analysis of the whole range of designs which have been made with the materials of the test up to the date of writing. Two facts, however, limit the applicability of this principle; firstly we do not as yet know all the varieties of response that will appear in any one culture, and secondly our knowledge of responses to the L.M.T. made in the U.S.A. is so much smaller than our knowledge of those made in Europe. It is inevitable that what follows in regard to principles of interpretation must be based upon study of European responses.

Since the general distribution of types of design differs considerably in each culture, it is possible that much of the detailed classification given in the following chapters may appear tedious or superfluous to workers in whose countries these types either do not appear or appear in much less variety. This procedure is adopted because all serious workers with the test should have before them a complete survey of the uses so far made of the materials of the test in order to be able to see the response obtained from the subjects they are studying against a background of the complete range of known responses. Chapters Two, Three and Four are therefore occupied with this survey.

It is in relation to the use of the L.M.T. in anthropological work

Description of the Test

that the importance of this principle is most clearly seen. For example, as examined in Chapter Ten, the attitude of the European worker to the making in the U.S.A. of the type of Pattern often called 'closed' and technically classifiable as Compact, is so different from that which seems natural to many American workers, that assessment of Centralised and Compact as against Diffuse and Multiform Patterns can be so different as to be opposite in significance. This can only happen when the acceptance of spontaneous impressions is uncritical and based upon unfamiliarity with the possibilities of opposite reactions in persons from different cultures. Satisfactory assessment of responses from a new culture depends, therefore, upon a sound knowledge of all the possible reactions to the test.

At the same time it must be remembered that it is not possible to convey a complete understanding of the test through the medium of print, and that even 144 illustrations (plus those in the text) make it possible to give only the barest outline of the possibilities inherent in the test material. Personal experience and direct personal teaching therefore inescapably remain the most reliable mode of transmission of knowledge. It must also be granted that for the full use of the test and an appreciation of its subtler aspects, a certain special quality is needed in the investigator, one akin to the quality in the musician that makes elements of form and rhythm obvious to him that, to the unmusical, are imperceptible.

2. GENERAL PRINCIPLES OF CLASSIFICATION

In attempting to present an account of the range of responses that can be made to the test, certain basic facts about the test have to be borne in mind. These are as follows:

- (i) Since the test is composed of separate pieces of material of defined and exact shapes, it follows that two factors are involved in its performance: some ability to perceive the shapes of the pieces both in themselves and in relation to the surrounding space, and actual manipulation of the pieces.
- (ii) The fact that the nature of the response that a subject makes to the test is an arrangement of these pieces upon a board of defined and standard area, makes it essential for the tester to be familiar with the whole range of Designs that are or can be made with the pieces,

Representational and Conceptual Designs

and with the relative frequency of their appearance among the class of subjects he is studying.

(iii) Experience with designs made either in the U.S.A., or by American subjects while in Europe, has brought to light the existence of a third, hitherto unexpected factor which will probably prove as important as the two already cited. This is the influence upon the form of the design, made by and preferred by a given subject, firstly of the conceptions of the nature and significance of design as such that are prevalent in the culture of which he is a member; and secondly of the opinion of the subject himself as to the relative merits of different possible qualities in designs as such. For example, where European subjects look for symmetry, intricate geometrical patterning and colour harmonies, American subjects tend to look in the design for 'thrust' and 'drive', 'originality', and freedom of movement. Anyone undertaking a response to the test will naturally aim at expressing in his design those qualities that he takes for granted as obviously desirable in any kind of design. Both of the above factors will influence the nature of the response made.

These three aspects of the L.M.T. make the test one of exceptional range, since it can be used to study: (a) perceptual processes in a wide variety of subjects such as young children, brain injured and deteriorated psychotic persons, and individuals with a mature and intact nervous system but in whom emotional factors bring about disturbances in perception of external reality; (b) for investigation of many aspects of normal growth and development; (c) for study of the imaginative powers and of the relation of phantasy to manipulative constructions in normal and disturbed persons; (d) for study of the structure of personality in normal subjects. This very width of application, however, imposes upon the investigator a need to define for himself as accurately as possible the purpose for which he is using the test and the kind of information he is seeking, in order that the material he obtains may be orientated to the goal he wishes to reach.

In order to achieve a clear comprehension of the full scope and exact nature of the test, and so be able to design research with it accurately, the three qualities already outlined need to be considered separately.

The first, the manipulative aspect, will be discussed in Chapters Five, Six and Seven.

Description of the Test

This chapter and Chapters Three and Four are concerned with a statement of the present position of our knowledge of forms of Design that can be and are being made with the test materials.

All designs, in whatever culture they appear, will be found to fall into three main groups :

- (1) REPRESENTATIONAL DESIGNS
- (2) CONCEPTUAL DESIGNS
- (3) ABSTRACT PATTERNS

3. DEFINITION OF DESIGN AND PATTERN

In the L.M.T., Design is the overall descriptive term used to cover the whole range of mosaic productions when these are being considered in their entirety.

The term Pattern is specifically reserved for those arrangements of pieces which their maker does not describe as having a representational or conceptual content.

The term Design is also used in a limited connotation to denote those arrangements of the pieces to which the maker attaches a representational or conceptual content.

This chapter describes the forms taken by successful Representational and Conceptual Designs. Designs can also be unsuccessful, but the lack of success is due to the presence of either inherent defect or immaturity, or of neurotic or psychotic disturbance in the subject. For the sake of clarity, therefore, consideration of unsuccessful Representational or Conceptual Designs will be found in the chapters devoted to consideration of the use of the L.M.T. in the study of these conditions.

4. CLASSIFICATION OF REPRESENTATIONAL DESIGNS

The type of Design which falls into this class was termed Concrete in earlier publications. This term has been changed to Representational because the older term at times led to confusion with Superimposed or Three-dimensional Designs. A Representational Design is one in which either the maker has set out to use the pieces directly to represent an external object or set of objects, or one in which imaginative or phantasied ideas or concepts are represented in, or said by the subject to be connected with, the design produced.

Representational and Conceptual Designs

A moment's thought will make it clear that a number of different processes will be involved in so wide a definition; indeed so many factors are involved in the production of the whole range of Representational Designs that in a schematic and somewhat elementary textbook designed particularly for the instruction of those who have little or no familiarity with the test, it is difficult to describe them adequately.

(i) The Kite, Fox and Rhinoceros Reactions

A connection between ideas concerning objects and the shape of the mosaic pieces occurs spontaneously at a very early age; it reappears at various levels of schizophrenic deterioration and in some mental defectives, and it takes many forms. Three of these have been classified as the Kite, the Fox and the Rhinoceros Reactions after three outstanding examples of these types of reaction. Two others which are described later in this chapter are termed the Story Reaction and the Delusional Paranoid Reaction. In order to clear the ground for the more objective classifications, we will start with a description of the Kite, the Fox and the Rhinoceros Reactions.

(a) *The Kite Reaction**. The placing of two scalene triangles with their long sides together gives an effect which resembles the outline of a kite. Children who discover this for themselves tend to term it delightedly 'a kite'. The same reaction occurs with mental defectives, and sometimes with psychotic patients. That is to say, in moving pieces about at random on the tray or in combining single pieces together a subject makes a new form which satisfies him. *When this has occurred* he is struck by a resemblance between what he has made and some familiar object or scene - in the simplest case, the kite. He then names the pieces accordingly. This process consists essentially in an association of ideas that takes place in the mind of the subject *after* a design is completed and plays no part in the construction of the design. The process occurs at different levels in construction; the simplest example of it has been chosen to describe the whole class, which is therefore termed the Kite Reaction. Another example is when a child makes a pile of squares and calls it 'handkerchiefs'. It will be interesting to see, with expanding use of the test, what associa-

* See Plate 74

Description of the Test

tions will occur in this type of reaction in countries where kites are not known.

(b) **The Fox Reaction.** The second process by which successful Representational Designs are created is quite different. It has been termed the Fox Reaction after a particularly successful example of this form of response* that was made by a Swiss child of five. In this design the essential attributes of a fox, seen from behind, in the act of watching something in front of him, have been exactly caught. The design was made quickly and spontaneously by the child, who set out to make exactly what is actually represented by the pieces. There is no question here of an association of ideas subsequent to the completion of the design as in the Kite Réaction, nor of accurate matching of piece to piece as in the Rhinoceros Reaction. What has occurred is a direct perception of form presented by the subject in the simplest way, the pieces being used almost as if they were painted with strokes of a brush with the least possible attention to the form or colour of the pieces themselves. This is an unusual but definite variety of response and could not be better presented than in this first Fox Reaction.

(c) **The Rhinoceros Reaction.** The third of these typical responses differs from both the above in that the maker of the design has set out deliberately to exploit the qualities of the individual pieces to the fullest extent so as to build up a presentation of an external object with detailed precision. If Figure 3 is studied carefully it will be seen that each major characteristic of the animal presented is reflected in the design, and that the geometric qualities of the pieces have been used with consummate skill. Since it is unlikely that a better example will be found of the exploiting of the geometric qualities of the pieces for the presentation of an accurate picture of an external object, this design has been chosen to typify the class to which it belongs.

In designs made by normal adult individuals of average ability, none of these three reactions generally appears. Most Representational Designs are built up gradually by experiment and a study of the possibilities of the pieces, and the degree of success in presenting a preconceived idea will naturally depend on the artistic abilities of the subject. Ordinary Representational Designs are of all degrees of

* See Plate 1

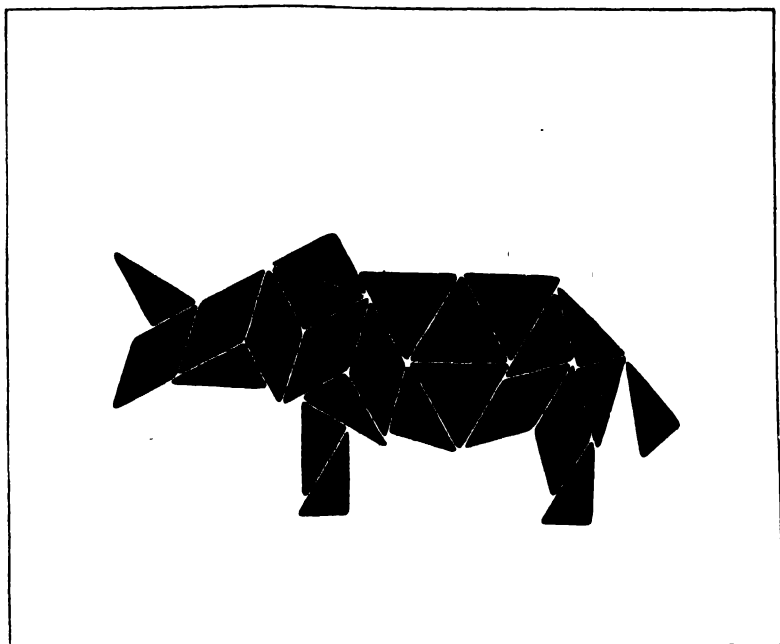


Figure 3: Rhinoceros

competence. Discussion of the design with the maker will furnish all the information necessary for understanding both the mode of construction of the design and its place in the standard categories. The Kite, the Fox and the Rhinoceros Reactions have only been singled out to make possible a practical description of the classes of Representational Designs that most usually occur.

(ii) Direct representation of external objects

In addition to the three forms already described, Representational Designs fall into the following groups :

- (a) Houses and other buildings
- (b) Persons and faces
- (c) Flowers and trees
- (d) Scenes
- (e) Transport

Description of the Test

- (f) Machinery, moving objects, and objects peculiar to the particular culture of the subjects
- (g) Animals
- (h) Letters or figures

(a) Houses and other buildings. These are probably the objects most frequently represented, though the degree of success achieved varies very greatly. Representation of houses may vary from a single square surmounted by a triangle, to elaborate and detailed structures. Plate 2 is a good average example in that both the front and the side of the house are presented simultaneously in a solid and somewhat obvious way. Houses can also be presented in outline, and often have the addition of a path and/or fencing; when these appear there is an overlap of classes with classification (d) Scenes. In some collections of Designs churches, schools or other buildings also occur. If the whole range of possibilities is considered, a very wide variety of construction appears under houses or buildings, but for the most part these tend in any given collection to conform more or less to a single type. Plate 3 shows an unusual variety in that the walls are presented both in outline and in mass, while the building is shown in perspective. It was called 'a castle' by the maker who was an electrical engineer.

(b) Persons and faces. Perhaps the most interesting and varied Representational Designs are found in this group. The representation of persons can be as skilfully carried out as in Plate 4, or as simply done as in Plate 5, or the person in Plate 12, or the 'lads' in Plate 15. In European collections of children's mosaics representations of people very frequently occur and show a wide variety in skill of Design and manipulation. Some children and some adults enjoy using the material for the construction of humorous and satirical presentations of character and show considerable ingenuity in so doing. For example Plate 6, made by an exceptionally brilliant boy of eleven, was said by him to represent 'An Edwardian father saying "What?", "What?" when confronted by the suitor of his daughter'. Here the figure is flanked by the letters WHAT, and the T is also intended to suggest an umbrella carried in the left hand of the figure.

Faces are also made, although they are not common. Here too a wide variety of skill is shown both in their size and their construc-

Representational and Conceptual Designs

tion. When children represent faces they tend to use the whole area of the tray; adults tend to construct amusing and humorous heads. It is a pity that limitation of numbers makes it impossible to include any of these in the illustrations; some of them are very ingenious.

(c) Flowers and trees. In European collections flowers come next in popularity and are often presented with skill and subtlety. Plate 7 has been selected not so much for skill or grace as to illustrate four of the ways in which flowers are commonly constructed. An analysis of this design will be found in Chapter Seven, page 189. Trees appear frequently, both standing alone as in Plate 129, and combined with other items as in Plates 100 and 91.

(d) Scenes. This group of designs overlaps to some extent those grouped under houses, flowers and trees. The term scene is used to describe Designs in which a number of objects such as a house, person, animal, flowers, trees, etc. are presented together in a natural setting. Scenes are often made by children as in Plates 90 and 93, or by adults as in Plate 100.

(e) Transport. Under this heading are grouped aeroplanes, ships, cars, etc. These are made most frequently by children and simple adults, usually men. Two of the commonest forms, a car and a ship, are illustrated in Plates 8 and 9. Both of these were made by children; they are discussed on pages 60 and 63.

(f) Machinery, moving objects and objects peculiar to the particular culture of the subject. Such things as windmills, kites, and the like form a small proportion of European Representational Designs; they are sometimes very ingeniously constructed. Other objects occur now and then, as in Plate 10 which was made by a miner. This represents a pick, a candlestick and a boat. In such cases the objects often show a functional connection with the daily life of the subject who has made them. Almost any kind of object can be presented in this group, and among non-Western peoples such objects will appear, as, for example, the 'lap-lap' of the Manus people, which are in common use in that group but unknown in other groups.

(g) Animals. These are a favourite theme with many people and occur in great variety. Much skill can be shown in their representation, as in the delightful horse in Figure 4 on page 56, which was made by a European woman who was an animal artist. Children sometimes achieve great vivacity and vividness in the representation of animals;

Description of the Test

their mode of construction can be either of the Fox or the Rhinoceros type.

(h) Letters or figures. In most collections of any size one subject will choose to represent a set of letters or figures. The execution of these varies enormously in skill. Figure 5 illustrates a combination of a word and a mode of transport.

(iii) Use of natural objects to form decorative Designs

Every now and again in European designs, representation of external

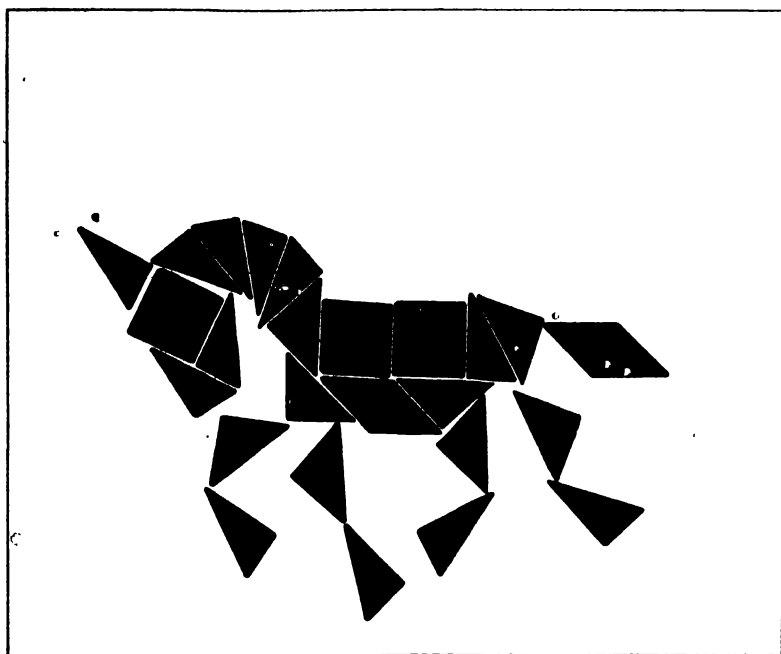


Figure 4: Galloping Horse

objects is used in a formal or decorative manner. Plate 11, 'Bluebirds and Waterlilies' which was made by an Englishman working in a meteorological office, is a good example of this. These too can vary greatly in versatility and skill. They can form a single composition or part of a repetitive design.

Representational and Conceptual Designs

(iv) Representation of phantasy or symbolic figures or scenes

One of the interesting aspects of the test is the stimulus, it gives to certain people to represent phantasy themes. These fall into two groups. The first group contains those designs in which use has been made of standard symbols of myth or fairy tale; the second contains designs in which the symbolism is personal to the maker. Plate 12 was made by an English woman. She described it as representing 'the Tree of Knowledge with a person reaching up to the Forbidden Fruit; a well with a snake in the place of a bucket; and a Bird of Ill

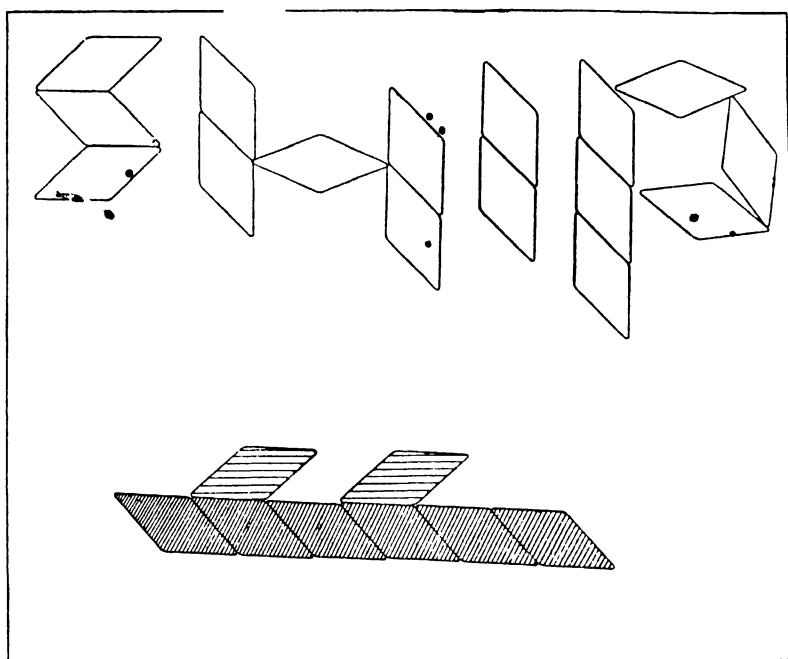


Figure 5: The word SHIP and a steamer

Omen perched on top of the well, with something yellow and starlike that has fallen from the sky'. This is an example of a design of the first group, since all the symbols used are those commonly found in myth and fairy tale. A second illustration of the symbolic use of a tree, this time in the form of 'The Tree of Life', will be found in Plate

Description of the Test

129. On the other hand, Plate 13 made by an English boy of nine and a quarter years, which is entitled 'A bird, an animal and a man from the planet Venus, together with live ammunition', is an example of a design of the second group, since all are individual symbols created by the boy himself. A great deal of space would be necessary to give a complete idea of the range both of idea and execution that appears in this type of design.

The characteristic of both these forms of phantasy Representational Designs is the directness of the connection between the ideas which the maker has set out to represent and the actual design which results, since the subject sets out deliberately to create a definite type of picture, and has the content of it (and possibly also some idea of the ultimate form) in his mind from the beginning. There are, however, other modes in which phantasies present in the mind of the subject become embodied in a Design.

(a) The Story Reaction. This is the first of such reactions. It is found in young children and psychotic patients and takes the following form. At no time does the subject set out to create a definite picture; instead he takes up pieces, usually one by one, and as he places them upon the tray he talks about the individual piece - or sometimes, with children, a small group of pieces - in a running commentary, as part of a story he is telling, aspects of which are represented by the pieces. Thus he may say, taking up a diamond piece, 'See here he is going into a house' (represented by a group of pieces), 'and here is another man' (another diamond piece or perhaps a scalene triangle) 'coming after him,' and so on. In Chapter Nine, page 267, Dr Ellenberger gives an account of this kind of behaviour in certain types of psychotic patient. Some mental defectives also occasionally show this form of relation between the ideas present in their minds and the use they make of the mosaic pieces.

(b) The Delusional Dissociated Reaction. A second type of relation between inner ideas and manifest manipulation of the pieces occurs also in some mental defectives and paranoid schizophrenics. Here the subject constructs what appears to be a straightforward arrangement of the pieces into an abstract pattern or patterns, usually of a simple type, and then when talking about them with the tester, reveals that they represent to him (the subject) elements of interior imagination which are, it is true, related in a general way to the forms

Representational and Conceptual Designs

of the patterns, but in a manner which could not at any point be deduced by the onlooker from the patterns themselves. This may be called the Delusional Dissociated Reaction. Examples of this reaction will be found in Chapter Nine, page 269. It is important to distinguish this from the Kite Reaction since in the Kite Reaction it is the overt and obvious similarity of the piece or pattern to an external object that gives rise to the title given by the subject, whereas in the Delusional Dissociated Reaction, the connection between the completed pattern or patterns and the account of them given by the maker exists only in the mind of the maker, and without his own explanation could not possibly be deduced by the tester from the pattern on the tray.

An extreme variant of this relation between the ideas in the mind of a subject and the design that he creates, is that in which *no* connection whatever is perceptible between the collection of pieces placed upon the tray and the title given to it by the maker. Such designs occur in the responses of very young children, of some mental defectives, and of schizophrenic patients. The 'schizophrenic cat' described by Dr Ellenberger (See Chapter Nine and Plate 136), and the 'wee sweetie shop' (see Chapter Seven and Plate 97) are examples of this.

(v) Bizarre Representational Designs

In large collections of designs made by different types of individuals, one or two designs will occur which fall outside the usual categories by reason of the bizarre nature either of their content or their execution. These are termed Bizarre Designs. An example is Plate 14 which was termed by the maker - an English delinquent man of twenty - 'Mercury running like hell'.

5. INDIVIDUAL CHARACTERISTICS OF REPRESENTATIONAL DESIGNS

(i) Movement

A wide variation is found in the presentation of movement in Representational Designs. It can be conveyed in the following ways:

(a) The whole Design represents movement. This can be conveyed through: (a) human figures, (b) animal figures, (c) mechanical forces, (d) natural forces, or a combination of any of these.

Description of the Test

(a) *Human figures.* Movement in human figures can be expressed either directly as in Plate 15 ('Lads doing exercises'), or symbolically as in Plate 16 ('Speed') where the human figures stand for the idea of movement itself.

(b) *Animal figures.* The horse in Figure 4 illustrates the use of an animal to express movement as the essence of the design.

(c) *Mechanical forces.* Among designs made by boys, the representation of cars, ships, aeroplanes and trains in movement often occurs, as in the car in Plate 8, where the placing of the two blue diamonds gives a vivid impression of movement.

(b) Movement represented in part of the design. Movement in this class of Design may either be expressed directly, or implied. There are the following possibilities :

(a) *Direct representation of movement in part of the design.* This can be embodied in living creatures or natural forces. For example, in Plate 11 the birds are represented as in movement, in contrast to the static lilies below.

(b) *Natural forces.* Water and fire are the natural forces most commonly represented. Plate 17 shows a small child's use of superimposed pieces to give the effect of fire burning furiously. Representations of lightning also occur.

(c) *Implied movement.* This appears in designs which either represent objects whose function is to move, or where movement is said to be about to take place or to have just taken place, as for example the yellow star in Plate 12 which was said by the maker to have just fallen.

(c) Movement expressing emotion. In all the groups so far considered movement exists, as it were, in its own right. But in some designs in which movement is expressed the movement embodies feeling, and has therefore to be considered in relation not only to movement as such but also to the feeling conveyed. For example the arms of the man in Plate 6 have obviously just been raised, but the act of raising them is to give expression to a feeling of disapproval and astonishment.

(ii) The use of colour .

In Representational Designs colour may be used in four ways: Naturalistic, Non-naturalistic, Symbolic and Indiscriminate.

Representational and Conceptual Designs

(a) *Naturalistic* use of colour. As the name implies, this appears in designs in which the colours used reproduce, so far as the material permits, the colours found in the natural or real objects represented. Thus the sky will be blue, grass green, houses white with red roofs, and so on; or, as in Plate 5, the colours will add point to the design, the yellow suggesting a pullover, the green the sleeves of a jersey, and the red a pair of shorts.

(b) *Non-naturalistic* use of colour. This appears in designs in which the colours of the pieces forming the objects represented in the design do not reproduce the colours of the original objects, but substitute colours which would not be found in the real world, as in Plate 3 where the colours are non-naturalistic but decorative.

(c) *Symbolic* use of colour. In conceptual designs colour may be used symbolically, and the association between the colour used and the idea it is intended to convey may be conventional as, for example, black for depression, red for fire, blood or wounds, etc. The use may be traditional as in white for mourning in China, or individual to the maker.

(d) *Indiscriminate* use of colour. This appears in designs where the maker has manifestly exercised no discrimination in the choice of colours in which he portrays his objects, but has ignored the colour value of the pieces. The result is that, while the shape conveys the form of the object represented, the colours have no significance. This use of colour is interestingly shown in the contrast between Plate 10 and Plate 5. In Plate 10, which was made by a miner, the shape of the boat, though quite recognisable, is made up of a variegated mixture of yellow, green, blue, red, white and black pieces which detracts from, rather than adds to, the clarity of the representation. In Plate 5, on the other hand, the colours of the pieces chosen add definition and description to the figure.

(iii) Skill

The question of the skill displayed in the making of Representational Designs is one of the most interesting aspects of the research side of the test, since it involves many factors.

(a) *Elementary Designs*. As will be shown in Chapter Five, success in the carrying out of even the simplest deliberately Representational Design involves the ability both to perceive and to manipulate cor-

Description of the Test

rectly the geometric relations of the pieces. Young children, and mentally defective and psychotic patients sometimes substitute for this a perception of resemblance between pieces placed more or less at random on the tray and the shape of familiar objects : for example, a line of squares terminated with an upright scalene is seen as 'a train'. Apart from this procedure, the representation by the pieces of an external object or scene involves the ability to perceive the fundamental qualities of the object represented and the analogy to these offered by certain of the pieces : for example, a design in which the general outside shape of a house is given by a square to which a triangle is added to represent the roof.

(b) Simple Designs. The second stage of skill is illustrated in Plates 5 and 10 where an elementary form of the inter-relations of the pieces is used to present the general overall shape of some external object : for example the miner's pick, lamp and boat in Plate 10.

In other cases the association between the real appearances to be represented and the colours available in the pieces makes it possible for recognisable effects to be achieved with very simple means. Thus children often put a row of blue pieces across the top of the tray and green across the bottom to convey the suggestion of sky and grass. This requires a minimum of skill. All such variants are, for the purposes of classification, grouped together under the single term Simple.

(c) Competent Designs. In order to progress beyond this point, the subject must not only perceive the shapes correctly and possess some knowledge of the actual correspondence of linear dimensions between the different pieces, but must also have the capacity to image the individual pieces in different positions, as well as the appearance that will be produced by combinations of pieces in different positions on the tray and also in relation to each other!

This class comprises the main block of European Representational Designs. The characteristic of the group is that only obvious and outstanding qualities of the shapes of the pieces are perceived by the subject, and these are matched to equally straightforward and obvious characteristics of the objects represented. Such designs may be small or large, and composed of single or several elements, but the essential in each case is the possession by the object of a straightforward outline which can be represented adequately by immediately

Representational and Conceptual Designs

perceptible inter-relations of the pieces. Typical examples of such presentations are Plates 2 and 8, and, from the structural aspect, Plate 100. Since this is a very large class it is convenient to subdivide it into three groups, i.e. Competent Designs 1, 2 and 3. C.D.1 is perhaps the largest subdivision. In this the whole conception of the design and the use of the pieces shows more ability than appears in simple Representational Designs, but the design itself is of an obvious type, the use of the pieces being restricted to one or two shapes, and these in their most easily perceived inter-relations (see Plate 8). C.D.2 presents a capable use of a small variety of shapes to give a good representation of a clearly outlined object (see Plate 2). C.D.3 describes a competent Representational Design, in which both form and colour are so well used that it borders on the class of the Clever Design (see Plate 3).

The representation of human figures more elaborate than those of the previous group falls into this class, together with trees, houses, scenes, and some cars and aeroplanes. The relation of skill to planning in these groups will be considered later in this chapter under section 7 which deals with planning. •

(d) Clever Designs. At this point a new quality appears: the capacity to imagine new combinations of pieces which can be used to present various and definite effects of mass and line. Not only does the maker need to have in mind correct images of the pieces singly and in combination, but he must also have made a close observation of the actual form of the natural objects or scene which he desires to present. The sailing boat in Plate 9, which was made by a boy of ten, illustrates this. The outline of a boat with sails set has been correctly remembered, the pieces well chosen for their purpose and appropriately grouped. In Plate 4 two lovers in period costume are presented with quite exceptional skill. The ingenuity of the rhinoceros of Figure 3 has already been referred to on page 52.

(e) Vivid Designs. Vivid effectiveness in Representational Designs may, however, occur as the result of a different process. Here the dominating factor is the vividness in the mind of the subject of the visual conception of the object he wishes to represent, combined with a relative indifference to the detailed shape (and sometimes also to the colours) of the pieces. Treating these latter as items of mass rather than form, the subject puts them rapidly together so as to pre-

Description of the Test

sent as a whole the object he has in mind (see Plate 17). Designs produced by what is termed the Fox Reaction are classified as Vivid.

The degree of skill shown in Representational Designs made by children can only be estimated in relation to their age. In assessing children's designs, the subject's experience of using the test materials plays a considerably larger role than in assessing the designs of adults.

In assessing the class in which a given design should be placed, the general level of skill in the whole of the particular collection that is being analysed needs to be taken into account, because the level of skill in the execution of Representational Designs tends to vary in differing cultures.

If a subject possesses both an accurate perception of the forms of natural objects and also the capacity for imaginative perception of the possibilities offered by combinations of the pieces, there are few limits to what can be achieved with the material. So rich a variety of designs exhibiting both subtlety and skill have been amassed that selection for illustration in this book has offered great difficulties; designs have had to be selected for reproduction in order to illustrate definite points in classification, not as indicative of the whole range of possibility.

6. CONCEPTUAL DESIGNS

In all European collections of Designs made by adults, one or two subjects will deliberately construct an arrangement of pieces intended to represent an idea or concept. It is rarely possible to deduce from the design alone, in the absence of its title, what the arrangement means to represent, although this becomes apparent once the title is known.

Conceptual Designs can be of several types :

(a) Designs in which abstract lines and masses are used to convey an abstract idea. Designs of this type appear more frequently among collections of psychotic individuals than among collections of normal individuals, and they are generally given the same kind of title as that used in Plate 18, i.e. 'A mixture of order and disorder, harmony and disharmony', which is an example of a design of this class made by a normal subject. Schizophrenic patients occasionally attempt to

Representational and Conceptual Designs

represent the grandiose ideas that occupy their minds through the medium of the test material.

(b) Designs in which representations of objects are used to convey an abstraction which may be either an emotional or a mental concept. Plate 19, made by an English Soldier during the 1939-45 war is an example of the use of a loose combination of objects standing for associations personal to the maker and together representing an emotional idea. The design is composed of representations of his regimental badge, a chain, a cross and blood. The whole design was named 'What the army means to me'. Plate 16 which represents the idea of speed, illustrates the second group. In European collections this class of design is most frequently made by imaginative adolescents.

(c) Designs in which objects of general significance are used to present a concept of general significance, as 'Liverpool Cathedral, the sun, the rain and the slums' illustrated in Plate 20.

7. PLANNING IN REPRESENTATIONAL AND CONCEPTUAL DESIGNS

A final element in the relation between the maker of a Representational or Conceptual Design and the design itself, to which some thought must be given, is planning.

As has already been pointed out, from the point of view of planning, Representational Designs fall into two groups: (i) those that are deliberately planned in the mind of the maker, and (ii) those that appear without premeditation during play with the pieces.

(i) In the production of any Complex Design of the first type six factors are operative, the analysis of which becomes of importance in study of designs made by psychotic patients.

These factors are as follows:

(a) The idea of the design first formed in his mind by the maker.

(b) The images of the individual pieces seen in any position.

(c) The intellectual ability and manipulative skill to devise combinations of the pieces which can be utilised to present the idea which has been conceived.

(d) A sufficient degree of interest, and of capacity to carry out a plan once it is conceived, to enable the individual to complete the work necessary to fulfil his purpose.

Description of the Test

(e) The conventions regarding representation in two dimensional material of three dimensional objects prevalent in the culture from which the individual comes.

(f) Sufficient flexibility of mind to enable the maker to modify his original concept, if it proves impossible to render it exactly as he conceived it, so as to bring it within the possibilities of the material.

On the whole, in the production of a Representational Design there is a continuous process from the first conception of the idea in the mind of the maker to the final appearance of the complete design. For the most part these are constructed as *figures* appearing on an unperceived *ground*, though in rare instances the background may be used to complete the outline suggested by the pieces composing the *figure*.

The essentials of the whole process are contained in the interaction between the conscious desire of the maker to produce a Representational or Conceptual Design and his ability so to combine and manipulate the pieces that they will embody his ideas.

(ii) Successful Representational Designs can, however, result from a different process. This type of design bears a close relation to the drawings produced in the course of a Jungian analysis, in that the final result emerges without the volition of the maker while he experiments with the pieces in a mood which resembles doodling; see Plate 21 which was described by the maker in the following terms :

The conscious intention in the maker's mind was to convey in an asymmetrical, abstract design a vague sense of flight, longing and nostalgia. The figure on the right hand side, with arms outstretched, was added at the end partly for reasons of design, but largely for purposes of clarification, emphasising by means of 'scale' and 'realistic expression' the heavy, awkwardly monumental quality of unsuccessful flight, but was felt to be unsatisfactory.

In composing such a design the maker may, without any preconceived ideas in his mind, place a number of pieces - usually of different shapes and colours - upon the tray, and begin to move them about to see what combinations they make. As he does so, some unintentional process in his mind will lead to the selection of some pieces and the rejection of others, until it becomes apparent to him that a significant form is growing upon the tray. In the majority of such cases the emergence of this form will catch the attention of the maker in the same way that cloud masses seem to resemble imaginary forms. He will then bring an element of deliberation to bear in round-

Representational and Conceptual Designs

ing out and defining the forms. The distinction between this and the previous class has a diagnostic significance.

The Representational Designs considered in this chapter are those in which success has been achieved. Representational Designs may also be unsuccessful. The varieties and significance of the latter forms are considered in Chapter Eight.

CHAPTER THREE

GENERAL PRINCIPLES OF CLASSIFICATION: II. ABSTRACT PATTERNS WITH RECURRING FORM

Illustrations referred to in this chapter in the order in which they occur:
Plates 23, 24, 25, 27, 28, 36, 99, 22, 29, 34, 48, 43, 37, 26, 30, 31, 32, 33, 35,
85, 73, 38, 39, 40, 41, 42, 80, 44, 82, 10, 83, 46, 47, 45, 49, 50. Figures in
the text: 1, 2, 12, 6, 7, 8, 9.

1. GENERAL CONSIDERATIONS AND DEFINITIONS

In this chapter we deal with the third of the three groups of Designs classified in Chapter Two, that is with Abstract Patterns.

(i) Definition

This term describes all arrangements of the pieces which do not fall into the category of Representational and Conceptual Designs. It therefore includes all responses that are intended by the maker neither to represent an object nor to present or symbolise an idea, but of which the maker says it is 'just a pattern'. The term Abstract in reference to Designs is used in the same sense as in visual arts, e.g. abstract painting or abstract sculpture. It should be noted that in the category of Abstract Patterns it is the complete Pattern which is classified.

Supposing that a large collection of responses obtained in Europe were combined with a similar number collected in the U.S.A. and the Representational and Conceptual Patterns were removed, certain very prominent differences would be found among the remaining Abstract Patterns.

The nature and the structure of these differences are discussed in Chapter Ten; we are here concerned only with their bearing upon the problem of classification. These differences, which will immediately become obvious, are concerned with the form of the Patterns and the

Abstract Patterns with Recurring Form

percentage-distribution of types of Patterns in collections made in the two countries. Before we can proceed with the classification of Abstract Patterns, we need carefully to consider these differences.

(ii) The Form of Patterns

When any large collection of European Patterns is analysed it will be found that two points emerge.

Firstly, the salient characteristic of the majority of these is their symmetry. This will be seen, for example, to be taken for granted by Dr Ellenberger in his chapter on work with psychotic patients, and to be implicit in all his estimations.

Secondly, certain definite shapes constantly re-appear. These fall into two categories: firstly, shapes, familiar to all members of European cultures, to which names in common use have been given (such as star, hexagon, etc.); secondly, forms whose constant recurrence within such a collection has necessitated the creation of technical terms which describe them exactly, for example a Winged Pattern.

On the other hand the salient characteristic of Abstract Patterns collected in America is the presence of relatively large numbers of responses that do not fall into these categories, and the presence of Designs that do not occur in European collections.

In order therefore to avoid confusion and to make these chapters of schematic description easy to use, the account of Abstract Patterns has been divided into two sections. Those Patterns that occur mainly in Europe and fall into the two classes described above, will be called **ABSTRACT PATTERNS WITH RECURRING FORM**. It is with these that the present chapter is concerned. Abstract Patterns that do not fall into these classes are termed **ABSTRACT PATTERNS WITHOUT RECURRING FORM**. Their description will be found in Chapter Four. When these chapters have been read, it will be seen that the recurrence of form referred to in these titles is the recurrence of a form of pattern to be found in different examples of responses within any large collection from a single culture, and not the recurrence of a form in any one design or series of designs made by a single individual. For convenience in describing these two types of Pattern, those described in this chapter will be termed **Eu-type Patterns**, and those described in Chapter Four will be termed **Am-type Patterns**.

Abstract Patterns with Recurring Form appear in American col-

Description of the Test

lections also, but in a quite different frequency. For example, in a collection of Abstract Patterns from operatives in light engineering works in Britain, less than three per cent were Patterns without Recurring Form; in a corresponding collection from the orthopaedic and skin disease wards of a military hospital, under two per cent were Abstract Patterns without Recurring Form. As explained in Chapters Four and Ten, there are essential differences between these and the American variety. Percentage figures are not yet available for the proportions of Patterns with and without Recurring Form in American collections of Designs made by adults, but sufficient evidence is available to show a very much higher proportion of Patterns without Recurring Form than occurs in Europe.

2. MODE OF USE OF THE PIECES

In all variants of Pattern, whether belonging to the first or second group, a fundamental characteristic of the Pattern is the manner in which the individual pieces are handled in relation to each other. In any type of Pattern the pieces can either be laid together so that their geometric properties are exploited and each piece fits closely to its neighbours, or they can be laid separately upon the paper or touch only at the points so that the spaces between the pieces are an essential element in the final Pattern; or a combination of both methods can be used. These modes of handling the pieces are termed respectively COMPACT, SPACED and INTERMEDIATE modes. Plates 23, 24, 25, 27, 28 and 36 illustrate COMPACT use of the pieces; the central part of Plate 99 the SPACED use; and Plates 22, 29, 34 and 48 the INTERMEDIATE use. These modes can be made use of in the creation of any form of Design, whether Abstract Patterns of either type, or Representational or Conceptual Designs. An additional general feature which is applicable to all classes, both Designs and Patterns, is the use of the pieces three-dimensionally. The Designs and Patterns with which we are concerned in this chapter are, on the whole, made in two dimensions.

3. CLASSIFICATION OF SUCCESSFUL ABSTRACT PATTERNS WITH RECURRING FORM

It is in the attitude to symmetry in Pattern that the most significant

Abstract Patterns with Recurring Form

differences between Am- and Eu-type Patterns appear. In Europe the vast majority of normal subjects make Patterns which are symmetrical along one or several axes. Symmetry in this sense appears to the maker to be synonymous with Pattern, and the making of a Symmetrical Pattern the obvious response to the test.

In Europe therefore, interpretative criteria for Abstract Patterns are intimately bound up with the form of the Pattern, and in dealing with European Patterns a comprehensive knowledge of all the known forms of Pattern is an essential background for understanding individual Patterns. It is the aim of this chapter to provide this background.

PRINCIPLES OF CLASSIFICATION

From a diagnostic and also a descriptive point of view, the two qualities that determine the classes into which Abstract Patterns with Recurring Form fall, is their overall shape and their relation to the area of the tray. We will first consider those symmetrical Patterns that lie well within the tray; secondly those that have a relation to the edge of the tray; and thirdly those in which use is made of the whole area of the tray. Three-dimensional and Asymmetrical Patterns are considered separately.

A fourth class called Collective Patterns is that in which two or more small Designs, each of which falls into one of the three main groups (Representational, Conceptual, Abstract), are placed in the tray, without any specific relation either to the whole area of the tray or to the edge. Such Designs may be either all Abstract, or all Representational, or some one and some the other. No example of this type has yet been met with that contains a Conceptual Design.

Group one: Single Patterns placed free within the area of the tray. These in their turn are classified into the following sub-groups.

(i) Fundamental Patterns

The first and simplest variety of such Patterns is that referred to in Chapter One as the Fundamental Patterns (see Figures 1 and 2). These are the simplest Symmetrical Patterns that can be made with each of the five shapes.

In Europe, Fundamental Patterns occur frequently in Designs made

Description of the Test

by children, mental defectives, simple people, and by some classes of psychotics. They occur also in the Designs of very inhibited people, or result sometimes from boredom or lack of interest in the test.

In Europe the star is a popular form which, however, appears rarely in comparable American collections. Both in American collections, and in those collected by Dr Kerr in Jamaica, the hexagon replaces the star in popularity.

In Patterns made by children, and particularly in collections of Patterns made by American children, a type quite frequently occurs that represents an earlier or Pre-Fundamental stage. In this type of Pattern part of a Fundamental Pattern is made, but it is not completed; (see the description of developmental stage 7 in Chapter Five, and Figure 12).

(ii) Patterns that take the form of recognised geometrical figures

Such Patterns occur very commonly in European collections from all types of subjects and fall into the following groups:

(a) Circular Patterns. This is the name given to all Patterns of which the overall shape is that of a circle or medallion. These Patterns can be of great variety and are constructed, in the main, of pieces used in an Intermediate manner. The circle may be large as in Plate 22, where the major part of the area of the tray is occupied by the Pattern; or small, as in the second Pattern of Plate 43. When the whole area of the circle is filled, as in a medallion, the star of eight diamonds or the hexagon of equilateral triangles usually forms the centre. So far we have not seen an example of a Circular Pattern in a single colour. Circular Patterns are not frequent, but have been described to meet the criticism often been brought forward, that circular shapes cannot be made with this material.

(b) Star-shaped Patterns. The definition of Star-shaped Patterns given in the Record Form is inadequate, a fact which, as so often occurs, was only perceived in using the Form. The definition should run: 'Star Patterns are Patterns that radiate from a centre to form five or more definite points'. Star Patterns with a star of eight diamond pieces in the centre, occur very frequently in European collections of mosaic responses. Plate 23 has been chosen as an illustration of Star-shaped Patterns because of its clarity, but stars of this marked

Abstract Patterns with Recurring Form

character are not the most usual. A very common type is a many-pointed star, such as would be produced by fitting two further diamonds into each angle of this star in Plate 23. It should be noted that there is a close relation between Star-shaped and Circular or Medallion types of Pattern. Many subjects begin their Pattern by making one of the simpler stars, and, by filling in the angles with squares and half-squares, produce a nearly circular medallion. If a subject who has filled in the angles in this way does not do so when making a Pattern on a later occasion, a definite desire to produce a star is indicated. Star Patterns are also commonly made with a hexagon of equilateral triangles at the centre and six radiating points.

As in all study of phenomena, classification is an abstraction based upon emphasis of salient characteristics designed to make possible the separation of different aspects of the phenomena, rather than a watertight definition of the phenomena themselves. As an example of this, Patterns can be made using the equilateral triangle or square as centre which may give a star-like impression, yet in such Patterns the star characteristic is of minor importance. Therefore three-pointed figures based on the equilateral triangle are classified as Triangular Patterns, and four-pointed figures as Cruciform.

(c) Square or Oblong Patterns. These often occur in Patterns made by normal adults. The square pieces are frequently made the basis of such a Pattern, for example that shown in Plate 24. They are often made from a combination of diamonds and half-squares. The term Oblong covers all other forms of Rectangular Patterns. As with the circle, Rectangular Patterns may either be completely filled in, as in the Pattern illustrated, or partially filled. It is here that this Pattern approaches another type – the Frame (see Plate 37), or Frame and Item, and often passes over into this. Exactly where the line is to be drawn between the two classes in any collection of mosaics, must be decided afresh by each investigator according to the purpose of his investigation.

(d) Triangular Patterns. This term describes all Patterns in which the main emphasis is upon triangularity. Such Patterns often have a differentiated centre, the differentiations being produced by the distribution of colour. In the main these Patterns occur in three forms:

(a) Patterns whose form reproduces exactly that of one of the original

Description of the Test

triangular pieces. This has not been illustrated because it is easy to recognise. Such Patterns could theoretically be made from any of the three triangles, but in practice it is the equilateral triangle which is generally used.

(b) Patterns triangular in overall shape, but without straight edges, using many shapes and colours of pieces. Plate 25 is a good example of this. If these Patterns are placed on the tray with a base parallel with the lower edge of the tray, the class must inevitably overlap that of Growing Patterns (see under (iii) Non-geometrical forms).

(c) Complicated Patterns possessing exact tri-radiate symmetry, whose nucleus is an equilateral triangle, either a single piece or a larger triangle built from a number of equilateral pieces. Plates 26 and 27 illustrate two modes in which a Tri-radiate Pattern may be produced, Plate 26 showing exceptional clarity allied to ingenuity, and Plate 27 being built about an equilateral triangle by placing the long side of a scalene triangle against each side and using the opposite side of each of these as the base of a long arm projecting out of the Pattern. These Patterns are a particular variety of Tri-radiate Patterns which are called Tangential as the three arms arise, not directly from the sides of the central triangle, but at a tangent to these.

(d) Oval or Diamond-shaped Patterns. The equilateral triangle, and its half, the scalene, are shapes with which more subtle Designs can be made than those easily achieved with the other pieces. Among these Designs is the oval shape shown in Plate 28. This Pattern illustrates a Medallion type of Oval Pattern of a rather simple kind, but shows well the curved outlines that can be produced.

Plate 29 is an interesting Am-type* variant of the oval theme. Here, as in so many Am-type Patterns, the Pattern is related to the whole area of the tray and in it space is treated in the American way – the green half-square on the right was deliberately introduced by the maker, a brilliant and creative American professional woman, in order to break the symmetry of the scalenes. This Pattern, indeed, with its compact top and bottom sections and its airy sides and centre, forms an admirable bridge between Am- and Eu-type Patterns, having some of the qualities of each. Since the diamond shaped type of Pattern that occurs frequently is, in essence, only an elabora-

* See Chapters Four and Ten

Abstract Patterns with Recurring Form

tion of the Fundamental Diamond Pattern (Figure 1), it is not illustrated here.

(e) **Linear or Arrow-shaped Patterns.** These terms describe Patterns that are narrow, linear, or arrow-shaped in form. These may be straight or zig-zag. Lines can satisfactorily be made in two ways. In

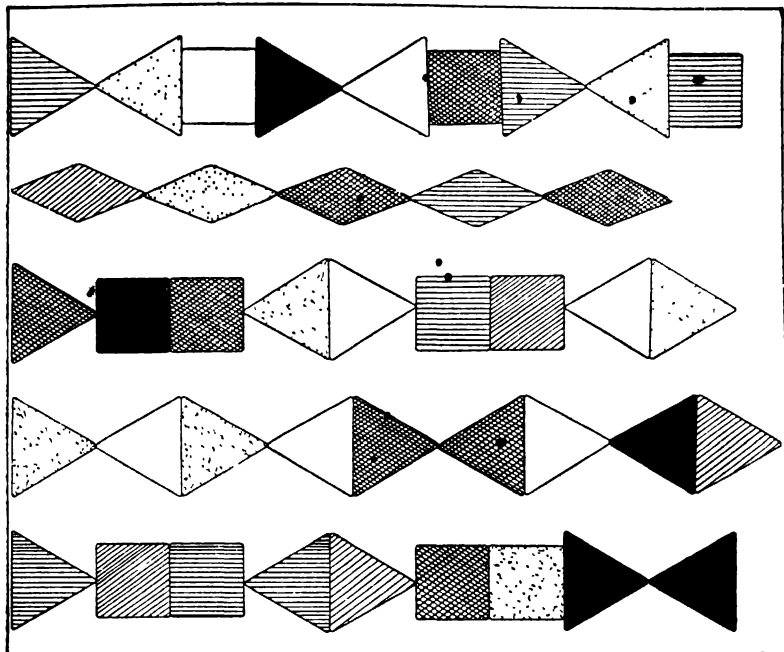


Figure 6: Collective Linear Patterns

the first method, any of the individual shapes, or a combination of them, can be laid end to end to form a line that can be curved or straight. Such lines are frequently used to form the stems of flowers. In the second method, pieces of the same shape are fitted together to create a straight solid line with either perpendicular or sloping ends. Many variants can occur, as for example the Collective Repetitive Pattern illustrated in Figure 6.

(iii) Non-geometrical forms

In addition to the geometrical forms enumerated above, seven other

Description of the Test

centralised Patterns can be clearly differentiated that do not lend themselves to any convenient sub-grouping. These are as follows :

(a) **Growing Patterns.** This term describes Patterns that grow upwards from a solid base that is wider than the apex (Plate 30). Growing is here used in an architectural sense. As has been explained on Page 74, there is an inevitable overlap between these Patterns and certain forms of Triangular Pattern.

(b) **Winged Patterns.** This is an interesting and, at first sight, unexpected type of Pattern, that is of quite frequent occurrence. In it the Pattern falls, as it were, into three parts, in which the two outer ones are mirror images of each other, separated by a central portion of a different type. An essential characteristic of the Pattern is that it should be possible to slide the centre portion out without altering the remaining portions of the Pattern. If the remaining two portions are then brought together they will form a symmetrical whole. The name Winged was given to this type of Pattern because of its resemblance to an insect with a central body and spread wings (Plate 31).

(c) **Cruciform Patterns.** This type of Pattern appears frequently and is often of striking appearance. The effect of a cross can be brought about by the use of either form or colour. The cross can either constitute the whole of the Pattern (Plate 32), or it can form the kernel of a more elaborate Pattern in which the cross can project over the edges of the subsidiary Pattern (Plate 33), and form part of the Pattern only; or it can make the significant feature of a complex and subtle Pattern. When setting out to make such a Pattern it is rarely the individual's intention to construct a cross, but through an inner necessity he finds himself so arranging the pieces that after completion of the Pattern its most significant feature is seen, in fact, to be a cross.

(d) **Repetitive Patterns.** This Pattern is one in which a single motif, that could be repeated indefinitely, is used in a decorative manner, as in a wallpaper pattern (Plate 34).

(e) **Irregular Patterns.** The term Irregular is used to describe Patterns that, while symmetrical about at least one axis, are combinations of simpler Sub-Patterns producing an irregular overall outline. In Plate 35, which illustrates this type, a small Diamond-shaped Pattern with projecting arms is poised erect above a larger horizontal diamond;

Abstract Patterns with Recurring Form

on this are two groups of scalene triangles flanking the lower tip of the upright triangle, and a third group forms a fan beneath it.

An interesting variant of this class is known as the *Cardhouse* type. It is chiefly made by older children (see Chapter Five and Plate 85). In this type, horizontal blocks of Pattern are placed compactly one above another, with no continuity of design, forming an Irregular Pattern in storeys.

(f) Unusual Patterns. In any large collection, a certain number of Symmetrical Patterns will be found which, although they seem to belong to the main group of Abstract Patterns with Recurring Form, do not fit satisfactorily into any of the sub-headings described above. It is suggested that these may be grouped under the heading Unusual Patterns. They are usually compact in structure, and symmetry, although not the usual type of bi-lateral or radial symmetry, plays an important part in their design (see Plate 36).

(iv) Handed or Diagonal Patterns (not in the Record Form)

In the analyses that were made of the first collections of Mosaic Patterns, two other groups were isolated and defined that are not included in the list given in the Record Form. These were Handed Patterns: i.e. those Patterns in which one side of a Pattern, arising from a symmetrical centre, is developed to the exclusion of the opposite side; and Diagonal Patterns, i.e. those built about a centre line running at an angle to either axis of the tray. Further study of European Patterns showed that these occurred too rarely to warrant a special category in the Record Form. It is expected that such forms when they occur will be entered in Question XIII 3g under 'Any other shape'. There is a small amount of evidence to suggest that these types occur more frequently in American collections.

Group two: Patterns with a relation to the edge of the tray. These fall into several sub-groups as follows.

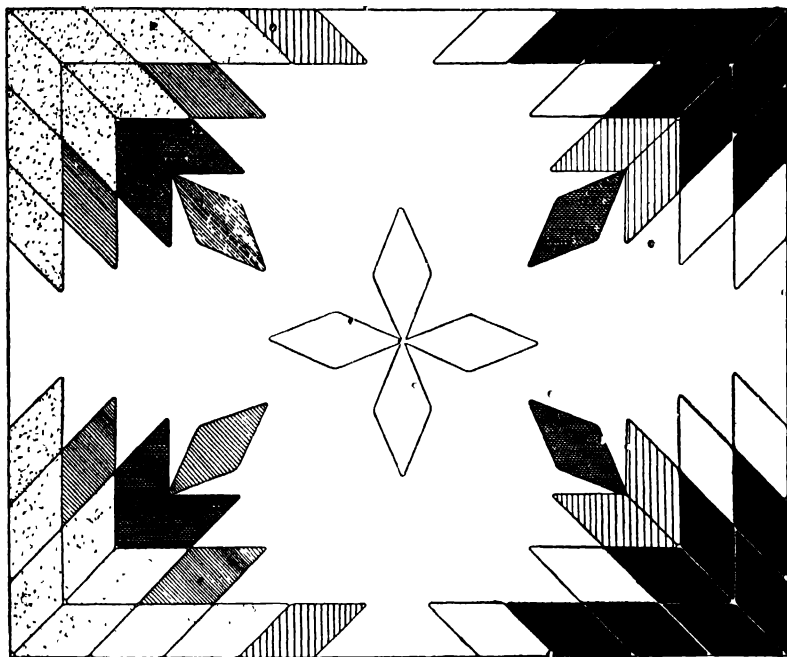
(i) Edge Patterns

These may consist of a small formed Pattern following a few inches of the edge of the tray only, and terminating there, or one whole side of the edge may form the side of a ribbon of Pattern, or pieces of Pattern may appear attached to various parts of the edge (see Chapter Five and Plate 73).

Description of the Test

(ii) Frame Patterns

When a Pattern extends unbroken around the whole of the edge of the tray the completed Pattern is called a Frame Pattern (see Plate 37). The frame can be of varying width; the inner edge may be irregular, and parts of it may project towards the centre of the tray. The frame may be empty, or a small Pattern may be placed within it; when the latter occurs the whole Pattern is termed Frame and Item.



*Figure 7: Abstract Pattern constructed in four corners
with central item*

Since this is very easy to recognise it has not been illustrated.

In certain classes of collections the Frame Pattern is a very common element, and great ingenuity can be displayed in the construction of these Patterns. As explained in Chapter One, it is mathematically impossible to construct a tray that permits the making of successful Frame Designs with all the given shapes. The standard tray therefore has been designed to permit of the construction of success-

Abstract Patterns with Recurring Form

ful Frame Patterns with a base of nine diamonds and one isosceles triangle on each long side of the tray, and seven diamonds and one isosceles triangle on the short sides. There are also a number of other possible ways of making complete and successful Frame patterns; but very commonly, although a subject desires to make a closely-fitting Pattern, he chooses a combination of pieces that makes this impossible and produces a more or less unsuccessful Frame as illus-

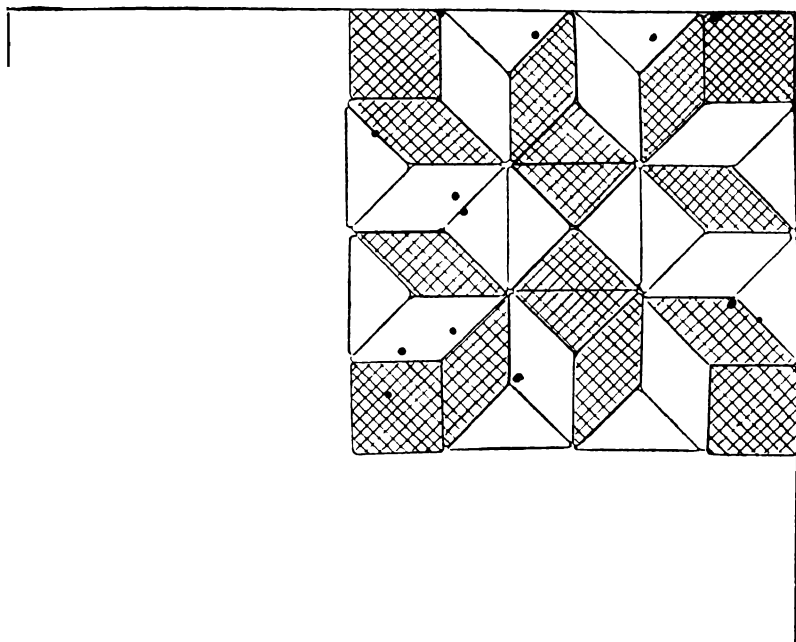


Figure 8: Symmetrical Pattern in one corner

Description of the Test

trated in Plate 37. Considerable variations appear in the handling of the pieces that compose these Patterns, but the Patterns themselves are usually Compact in type.

It is convenient to include here a type of Pattern that does not strictly belong in this group of Patterns with a Relation to the Edge of the Tray: namely those in which a Frame is constructed but placed free in the tray with a small separate Pattern within the middle. This type of Pattern is also called *Frame and Item*. Very occasionally a Frame placed freely in the tray may occur without a central item.

(iii) Corner Patterns

This term is used to describe Patterns in which only the corners of the tray are used. They are of two types:

- (a) Arrangements of pieces placed in each of the four corners*, often projecting towards the centre. These are usually symmetrical in form, and may or may not be symmetrical in colour. Equally, there may or may not be a separate small item in the centre of the tray (Figure 7).
- (b) Some subjects, usually those suffering from neurosis, place a completed Symmetrical Pattern in one corner attached to the edge of the tray. Such Patterns may be very small and poorly integrated, or competently constructed as in Figure 8. They are discussed in Chapter Eight.

(iv) Pendant Patterns

This name is given to Patterns that give the effect of hanging from the upper edge of the tray (Plate 38). This Pattern is discussed in Chapter Eight.

Group three: Patterns that are essentially related to the edge and make use of the whole area of the tray

In many large collections of Patterns, whether from Europe or America, a number of Patterns will be found in which the exact shape and size of the tray play a determining part. To the experienced tester, differentiation of the various sub-groups that come under this classification offers no difficulty, but from the point of view of con-

* A full discussion of this type of Pattern will be found in Chapter Eight.

Abstract Patterns with Recurring Form

venient classification and of the instruction of beginners it is difficult to invent terminology that will adequately and conveniently distinguish the classes from each other, and also from another group which is akin to it. Experience has shown that grasp of the implications underlying these differences of relationship between the disposition of the pieces and the area of the tray is of considerable importance in the study of Patterns, particularly in the study of differences in the American and European attitude to space. Nevertheless, what is easy to make clear by demonstration is difficult to embody satisfactorily in any form of words.

We have already seen in Plates 22 and 29 how it is possible for a single centralised Pattern to be so constructed that the possibilities offered by the size of the tray are fully exploited, but nevertheless the Pattern remains a single construction, unitary in nature, with each part continuous with the whole. Further examples of this attitude of the subject to the tray will be found in the description of Composite and Diffuse Patterns in Chapter Four.

In the group of Patterns we are now about to consider, the relationship of the Pattern to the tray is a different one. Here it is not the area and edge of the tray, considered much as an artist regards the space of his canvas and its eventual frame, which comes into operation, but the attention of the subject is focussed instead exclusively upon the *shape* of the area offered him, and upon the four edges to this shape as being the major determinants in what he does with the pieces. It is the rectangularity of the tray which comes to take the central place in the characteristics of these patterns, and however the pieces are used – whether compactly, intermediately or spaced – it is this rectangularity which is predominant.

Such patterns fall into three sub-classes according to whether the mode of use of the pieces is Compact, Intermediate or Spaced. What is, however, very difficult for the beginner to grasp is that the actual patterns that fall into these three sub-groups do nevertheless each embody a similar attitude on the part of the subject to the rectangularity of the tray. This difficulty arises from what appears at first sight to be dissimilarity rather than similarity in the appearance of the Patterns, since the outward appearance of a Compact Pattern of this class is very different from that, for example, of a Spaced Pattern. We will begin with this sub-group.

Description of the Test

(i) Compact Patterns

Many children and some adults, when presented with the test, feel compelled to attempt to construct a Compact Pattern that will completely cover the tray. This is difficult to do and the usual mode of attempting it makes it even more so. The most usual procedure is to start round the edge and work towards the centre. It so happens that the geometrical relationship between the pieces and the tray is such that this method cannot succeed. To achieve success the problem has to be grasped as a whole and the maker must either have found out by experiment the exact number and kind of shapes, and the method of arranging them with which it is possible to make a closely fitting Pattern that completely covers the tray, or he must have hit on the solution by chance. This latter presupposes either a considerable intuitive feeling for mathematical shapes or an unusual stroke of good fortune. Success with this type of Pattern is so rare that it is not illustrated.

What most frequently happens is a painstaking attempt to achieve a successful Compact Unitary Pattern that entirely covers the tray, but which, because it is started with pieces with which this cannot be accomplished, can only partially succeed. Plate 39 illustrates what then occurs, viz. a Pattern that has a Recurring Form, but in which, at points where it is not possible to complete a line of fitting pieces, other pieces of a different shape are used in an attempt to fill the spaces that are left. The fact that in this way small spaces of the tray are left uncovered brings Patterns of this sort into the class of unsuccessful Patterns, since a complete covering was desired, but symmetry in the use of non-fitting pieces weighs in the scale against this. Detailed discussion of this type of Pattern will be found in Chapter Eight.

The same type of consideration enters into the use of colour in such Patterns. It is clear, for instance in the example illustrated, that from the maker's arrangement of the two edges he wished to make a regular colour scheme, but owing to the fact that there are not enough half-squares of the requisite colour in the box, he was unable to complete this. The details of Patterns of this type are important diagnostically, since in his reaction to frustration and limitation in the test the subject will display his probable reaction to frustration and limitation in real life.

Abstract Patterns with Recurring Form

A variant of this type of Pattern that has a superficial resemblance and achieves the same end (in that the whole area of the tray is covered by pieces placed compactly together) occurs when the maker, instead of setting out to make a single unitary design that shall cover the tray, makes instead a number of what are really discrete and separate patterns, but which he places closely side by side so that in the end they do in fact wholly cover the tray.

A second variant is where the individual has actually covered the whole area and used the pieces in a compact manner, but has not attempted to make a Pattern at all, and instead has made a uniform covering of the surface by the use of compactly arranged pieces of a single shape. For reasons given above this attempt must be unsuccessful.

(ii) Intermediate Patterns

Into this group fall Intermediate arrangements of pieces in which groups and/or single pieces are disposed symmetrically about the surface of the tray and attached or related to the edge so that, taken together as a whole, they form a single Design. Plate 40, made by an American Grade-school boy, illustrates this type of Pattern. Although this is a somewhat uncommon variant, in that the similar groups of pieces around the edge are disposed symmetrically, the two groups in the centre, symmetrical in themselves, differ from each other. The formation of each of the eight groups of pieces forming the sides and centre of the Pattern shows the characteristic Am-type use of the pieces that has been found in Symmetrical Patterns made by Americans. It has been chosen as an example of this group in order to illustrate a characteristic which, although it does not form an Am-type pattern, is a very common feature of patterns made in the U.S.A., and occurs very rarely in European collections.

(iii) Spaced Patterns

This type of Pattern has not been illustrated because it differs from class (ii) only in that the pieces employed by the subject are used in a Spaced rather than an Intermediate manner. Patterns of this type will essentially be symmetrical arrangements of single pieces along the edge and in the centre of the tray.

Group four: Collective Patterns

This is the term given to an arrangement in which several small Patterns are disposed within the area of the tray, but are not considered by the maker as forming a single Design. This is a type of arrangement that occurs frequently in collections of patterns made by industrial workers in Britain. There are several variants of this class :

(i) Separate individual Patterns are made and placed on the tray wherever room can be found for them without discernible order in their relation to each other or to the area of the tray. In such Collective Patterns individual pieces can also be included, as for example in the Jamaican Patterns collected by Dr Kerr and discussed in Chapter Ten, where as many as forty-two occurred in one response. On the other hand, in the more usual response the number of separate Patterns ranges from two to six. These individual Patterns may or may not all display the same mode of use of the pieces (i.e. they may be all Compact, or all Intermediate, or some one and some the other). Spaced Patterns rarely occur in such a group. Sometimes small Representational Designs are included. Plate 41, made by a British worker in a light engineering factory, is an illustration of this class. Here are three small Abstract Patterns of which one is Elaborated and the other two are Pre-fundamental and Elaborated Fundamental.

(ii) A number of separate Patterns may be made and arranged on the tray in an orderly manner, that may or may not be successful. These types of Pattern occur both in Europe and in America.

(iii) There occurs now and then, particularly in American collections, a variant that, because it expresses a special attitude in the subject, has been given the name of Objective Experimental (see Plate 42). This term describes Collective Patterns in which each shape of the pieces has been taken out in turn and experiments made with it in order to find out what sort of form the different shapes can be made to take. A Pattern is then made with each of the shapes in turn and the final Design is a Collective Pattern showing the possibilities of combination of the different shapes.

With Collective Patterns we reach the end of Abstract Patterns with Recurring Form which have so far been isolated and recognised.

Abstract Patterns with Recurring Form

It will be obvious however that these classifications are only a framework, and that there is a wide range of variation in which the Patterns are executed.

Consideration of these qualities therefore forms a method of cross-classification that facilitates more detailed description of individual Patterns. We will consider these characteristics in turn.

4. GENERAL CHARACTERISTICS OF PATTERNS WITH RECURRING FORM

(i) Skill

So far, in considering Abstract Patterns with Recurring Form, we have regarded them from the point of shape and content only. An element however of equal, or sometimes of greater, importance, for diagnostic purposes is the presence or absence of skill and ingenuity in the carrying out of the Pattern. For this purpose Patterns are classified under five heads: Elementary, Simple, Popular, Complex, and Ingenious.

(a) *Elementary Patterns* are those in which either a Fundamental Pattern is made or a very few pieces put together in some other way.

(b) *Simple Patterns* are those in which only a very obvious, simple use is made of the pieces to form a successful Pattern (other than a Fundamental Pattern). These Patterns are generally very small (see Plate 41 and Plate 80).

(c) *Popular Patterns* is the term under which are grouped the Patterns that most commonly occur in any culture (see Plates 22, 23, 24, 28 and 30).

(d) *Complex Patterns* are Patterns in which usually a large number of pieces are used and which show an elaboration of Design, but if the Pattern is carefully studied, it will be found that the actual manipulation of the pieces is as simple as in the popular Patterns (see Plates 25, 33, 35 and 36).

(e) *Ingenious Patterns*, on the other hand, may be large or small and are classified as such because, considered from the point of view of manipulative ingenuity alone, the arrangement of the pieces shows evidence of greater skill than any of the other classes (see Plates 26 and 43).

Description of the Test

(ii) Planning

It is very much harder consciously to plan an Abstract Pattern with Recurring Form than to do so with a Representational or Conceptual Design, and deliberate planning occurs with considerably less frequency in the former than in the latter. This type of Abstract Pattern is not for the most part planned, but most frequently grows. All the same, from the point of view of planning, two distinct classes exist. In the first, a certain ground-plan is laid down by the subject - for example, a central star or hexagon or a frame within the tray - and this is then enlarged and elaborated. Study of many Patterns of this type, during the making, shows clearly that an idea in a rudimentary state exists, before they start, in the mind of most subjects who make this type of Pattern, though they would find it very hard to put this concept into words. In these instances the process of the making of the Pattern is that of deliberate development and appears to relate to a basic idea half consciously held.

In the second group the development is different in that two processes seem to be going on simultaneously in the mind of the subject, one conscious and one unconscious, and the resulting Pattern often surprises the maker.

Interpretation of Patterns with Recurring Form made by normal people is intimately related to this dual process in which the maker is consciously aware only of part of what he does. Planning, therefore, is a very relative term where this class of Abstract Patterns is concerned.

(iii) Use of Space in relation to Pattern

All mention so far made of space in relation to Patterns has been concerned with the relation between the Pattern and the total space of the tray. There is, however, another aspect of space, which is the use of the uncovered area of the tray *within* a pattern. This space is therefore termed Interior Space, in contrast to the use of space referred to above as Exterior Space.

The use of Interior Space falls into four classes, each with a different psychological significance.

(a) General distribution within the Pattern. This is the use of space already met with in the description of Spaced, and also of some Intermediate Patterns. It could be termed an unconscious use of space,

Abstract Patterns with Recurring Form

because although the background plays an essential part in the production of the final effect, yet the attention of the subject is concentrated upon the pieces and not upon the space; that is, it is the fact of the *separation* of piece from piece or block from block in a single unitary pattern that holds the attention of the maker, and not the space as such (see Plate 26).

(b) Patterns with a hollow centre. These are Patterns in which a space appears involuntarily within the Pattern. Into this group come patterns with high diagnostic significance, in which the maker has struggled to produce a Compact or Medallion type of Pattern and has been unable to do so successfully, the centre remaining an empty space. This point is further discussed in Chapter Eight page 228.

(c) Patterns with a defined central space. Three examples of this type are illustrated in Plate 44, each made by a different individual: Patterns A and B by Jamaican children, and C by a young woman of European origin. The essence of this class is that the maker has set out in his arrangement deliberately to focus his attention as much on the 'ground' as on the 'figure', and wishes to use his pieces so that not only do the pieces themselves form a completed Symmetrical Pattern, but the area of the paper left uncovered in the centre has also a defined geometrical shape.

(d) Patterns with repeated areas of defined space. In Patterns of this type, two or more areas occur in which the pieces are arranged with this double intention. These are Patterns in which attention is divided equally between the pieces and the space, and can be very pleasing in effect and skilful in achievement, as Plate 26 shows.

(iv) Use of colour

At first sight the variations in the use of colour in Abstract Patterns are so many that it is difficult to see how they can be reduced to order. But careful study of the Designs shows that these variations are capable of classification.

One of the limitations imposed by the material upon the subject has a particular bearing upon the use of colour. The shapes of the pieces and the range of colours are so rigidly defined that persons in whom the colour sense is dominant, and whose preference, supposing they were using a medium such as paint, would be for the use of colour rather than form, tend to find themselves handicapped by the

Description of the Test

material. This limitation is real, but it does not affect the validity of the classification of colour in Patterns. For the very function and aims of the test involve the imposing of specific limitations on the subject in order to bring a number of his abilities simultaneously into play in the making of his Design.

The principle of classification of colour in Abstract Patterns is based therefore on an objective analysis of the relations of the colours and shapes as they appear in actual patterns.

Colour in Abstract Patterns with Recurring Form is used in three main ways :

(a) A complete lack of interest in colour, resulting in its indiscriminate use (see Plates 82 and 10).

(b) Rejection of colour, i.e. an exclusive use of white or black only, or a combination of both (see Plates 43 and 83).

(c) Deliberate use of colour.

This last group divides again into the following classes:

(a) The use of a single colour.

(b) The repetition of the exact form of the Pattern in the colours used (Plate 46).

(c) The colours used in the Pattern change the general effect. For example, if Plates 22 and 23 are compared it will be seen that each has in the centre an eight-pointed diamond star, but the *effect* of the star is completely different in the two designs owing to the way in which the colour is used.

(d) This effect can be carried further, and the colour used to produce a form that is *different* from that made by the pieces. This is brought out particularly clearly in Plate 47 because, although the actual form of the centre is exactly that of Plates 22 and 23, the arrangement of the black and yellow transforms the final effect from a star to a Whirling Pattern.

(e) The use of colour to produce asymmetry in an otherwise Symmetrical Pattern, as in Plate 24.

(f) A use of colour that gives originality to a frequently occurring type of Pattern, as in Plate 33.

(g) A use of colour in which the effect of the finished Design is brought about partly by the form and partly through the colours used (Plate 25).

(h) A type of Design in which colour is used in a symmetrical way

Abstract Patterns with Recurring Form

which variegates the Pattern without adding anything to the quality of the design (Plate 23).

(i) A pattern in which this tendency is exaggerated to produce an effect of supersymmetry without adding to the meaning of the Pattern (Plate 45).

(d) Number of colours used. Children (and some adults) sometimes deliberately use all the six colours because they feel that they *ought* to make use of everything offered to them. People with little spontaneous interest in colour tend to use the colours (with the frequent exception of black or white) indiscriminately and without attention to their placing, but in more sophisticated designs, two colours are often used (or three, if white and black are counted as colours).

Finally, the use of colour may depend on the customary emotional association given to certain colours. For example, an individual may deliberately use red or black in an Abstract Pattern to express anger or depression, or, when this association is pointed out to him after completion of the Pattern, he may agree with this interpretation.

(v) Movement

Movement can be represented in Abstract Patterns with Recurring Form in several ways:

(a) Circular movement. A common feature of Single Patterns placed free in the tray is an arrangement of pieces in the Pattern that represent circular movement. This is the class which used to be called Whirling Patterns; it is illustrated in Plates 46, 47 and 48. This whirling movement may involve the whole circumference of the Pattern; Plate 46 is an example in which both colour and form are used to create a pattern whose essential quality is its whirling movement. In European collections this is a relatively common type of Pattern. A whirling arrangement can also occur within a pattern, as in Plate 47 where the movement is produced by the arrangement of black pieces in an otherwise static pattern.

The circular movement in a Pattern may be in one direction (Plates 46 and 47), or two or more whirling movements moving in opposite directions may be combined in one pattern, as in Plate 48 made by a Dutch psychological student*.

* We are indebted to Dr B. J. Kouver for permission to reproduce this Design.

Description of the Test

(b) **Linear movement.** The arrangement of pieces in an Abstract Pattern may present movement from without, inwards, or movement

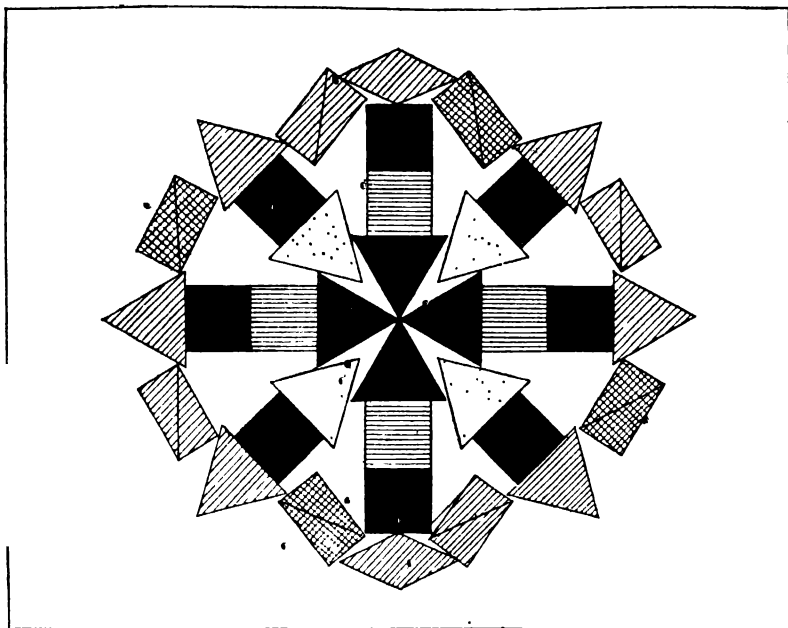


Figure 9: Linear Movement

from within, outwards. The question of whether lines radiating from a centre are to be regarded as indicating the idea of movement or not, can only be decided through the comment made by the maker on his pattern. A fairly common feature of European Patterns is the embodiment of arrow-shaped linear arrangements of pieces that unmistakably give the impression of forces driving towards or from the centre of the Pattern and are accepted or interpreted by the subject as such. In some Patterns movement in both directions can be combined; Figure 9 shows a pattern of this type.

(vi) Expression of emotion

Great caution must be used in the attribution of emotion to elements of Abstract Patterns. It is a common error, for example, to treat all black colour appearing in an Abstract Pattern as indicative of de-

Abstract Patterns with Recurring Form

pression, and all red as representing aggression or anger; but both black and red can be used in a purely decorative manner (Plates 49 and 50), and at times the maker of a Pattern containing a large element of black will say 'I like black – it throws up the other colours'. Similarly red can be referred to by the maker of a pattern as being cheerful or energetic.

It is possible however for the distribution both of red and of black in a pattern to be of great significance, particularly if it occurs in the form of spikes protruding from the edge of the Pattern. But the question of the expression of emotion in Abstract Patterns is so complex that it can only be touched upon here and will be further discussed in Chapter Eight.

(vii) Supersymmetry

This is a term introduced by Dr Frederic Wertham to describe a type of pattern that he feels is pathognomic of schizophrenia. In supersymmetry the form of the pattern is laboriously symmetrical, and the colour is used in a manner which often appears at first to be indiscriminate; but if the Pattern is carefully studied it will be found that the colour of the pieces is exactly balanced and repeated, although this symmetrical repetition adds nothing to the general effect of the Pattern, and indeed in some cases detracts from it (see Plate 45). In Repetitive Patterns on the other hand, as in Plate 34, the repeat of shape and colour is an integral part of the form of the Pattern.

5. ASYMMETRICAL PATTERNS

A further group of Patterns needs to be described that does not fall closely into any of the previous classifications. These are Patterns that are deliberately asymmetrical. In this type, the maker sets out deliberately to make a Pattern that shall be asymmetrical and which is usually centralised. To date, these have been found in Europe only and made almost exclusively by artists. The basic difference between European and American attitudes to asymmetry is most interestingly seen in this group (see Plate 49).

An interesting feature of modern British response is the appearance among young people of Patterns that tend to approximate to the Am-type (described in the next chapter), but which yet carry Eutype characteristics.

Description of the Test

6. THREE-DIMENSIONAL PATTERNS

As has been said above, most Designs and Patterns are constructed in two dimensions. But some people feel a desire to use a third dimension and, to satisfy this, place additional pieces on top of those already laid down, sometimes for emphasis, and sometimes as a contributory element to the completed Pattern (see Plate 50). Such additions occur in Patterns both with and without Recurring Form and are called respectively Superimposed and Layered Patterns.

(i) Superimposed Patterns

In these Patterns, when the basic Design has been constructed, additional pieces are laid on those already placed, altering the effect of the Pattern either in colour or form or both; or the placing of one piece wholly or partly upon another may occur throughout the making of the Pattern. The first process occurs in Symmetrical Patterns with Recurring Form, and the latter in any of the varieties of Patterns without Recurring Form.

The same impulse towards varying the depth of the patterns operates in those individuals who, in the making of their Pattern, stand some of the pieces they use on edge. It is, unfortunately, impossible to reproduce these, but the effect is often charming and gives much satisfaction to the maker.

(ii) Layered Patterns

Some individuals carry both principles a step further, and make one, two, or even three complete Symmetrical Patterns that are laid one on top of the other, producing an encrusted effect. This type of Pattern has so far only been met with in Europe.

CHAPTER FOUR

GENERAL PRINCIPLES OF CLASSIFICATION: III. ABSTRACT PATTERNS WITHOUT RECURRING FORM

Illustrations referred to in this chapter in the order in which they occur:
Plates 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 29, 62, 63, 64, 65, 66, 67, 68,
69, 70, 71.

1. GENERAL CONSIDERATIONS

In this chapter we complete the study of the classes into which mosaic Designs commonly fall, by considering the nature and classification of Patterns without Recurring Form.

The term Patterns without Recurring Form applies to all arrangements of the pieces other than those defined as Representational or Conceptual Designs and the special groups described in the previous chapter.

As stated in the previous chapter, Patterns with Recurring Form can generally be classified on the basis of the completed Pattern. But to classify and understand Patterns without Recurring Form, information as to the attitude and intentions of the subject making the Pattern is *essential*.

Even with this qualification, Am-type Patterns without Recurring Form can still only be classified tentatively, because sufficient material is not yet available for final assessments to be made.

It is in this type of Pattern that the difference in attitude and response to the test between America and Europe is mainly found. Patterns without Recurring Form are referred to as Am-type Patterns and those described in Chapter Three as Eu-type Patterns, to make clear what Patterns are being described. Since the nature of this difference is discussed in Chapter Ten, in this chapter only its objective form will be considered.

Description of the Test

Since it is in Patterns that make use of the whole area of the tray that these differences are most clearly seen, the order of the preceding chapter will be reversed and this group taken first.

Study of Am-type Patterns has shown that three varieties of Pattern that are related to the whole area of the tray appear in collections made in the U.S.A., examples of which have not so far been found in Europe; while other types that occur in both areas do so with opposite connotations.

To make clear analyses of these differences possible, four new classes of Pattern have been added to the classifications already in use.

2. PATTERNS THAT ARE RELATED TO THE WHOLE AREA OF THE TRAY

(i) Multiform Patterns

This term describes a type of Pattern that to date has appeared only in U.S.A. collections. It is one in which the maker has set out upon the tray a number of separate groups of pieces, possibly including individual pieces, that, in his view, together compose a single Pattern. Plates 51, 52 and 53 show three different examples of this class. In Plate 51, four groups of pieces appear, in three of which pieces are superimposed. Of these, those labelled a, b, and c, have a symmetrical shape, while d is without symmetry. In order that the quality of this Pattern may be appreciated, it is essential to know that the maker saw it as a single whole. In European Patterns, when several separate blocks of pieces appear on a tray they are felt by the maker to be separate Patterns and the Pattern falls into the type called *Collective Patterns*. It is only after gaining considerable familiarity with Am-type Multiform Patterns that the unity of this form of design can be seen.

An interesting feature of Plate 51 is the fact that, to the maker, it was the arrangement of colour that united the elements of the Pattern into a single whole. It has been selected to illustrate this variety of Multiform Pattern because of the presence in it of both strictly symmetrical elements (which would come within the grouping of Patterns with Recurring Form), and a collection of pieces arranged loosely and in the main without geometric relations to each other.

Abstract Patterns Without Recurring Form

In Plate 52 seven groups of pieces and two single pieces are disposed about the tray, composing a single rhythmic Pattern. In this Pattern a new element appears: the deliberate placing of pieces contiguously to each other so as to carry out the rhythmic effect, without symmetrical or geometric relations. Such a placing of the pieces, when it occurs in European Patterns, differs in this vital respect, that in the vast majority of cases it constitutes a *failure* to do something else and does not represent a deliberate intention.

Plate 53 illustrates a third form of Am-type Multiform Pattern. Here the pieces are all used in strict geometrical relationship to each other, but four separate Patterns appear. Once again, some American and all European observers would classify these as four separate units, but to the maker they formed a single whole.

In the Am-type use of the material, the aim of the maker is generally to achieve an effect of rhythm and movement. The European aims at fitting the pieces together in accordance with their geometrical properties, and producing in the end a Symmetrical Geometrical Pattern that he finds satisfying. Careful research has been made among all collections available to us for Patterns comparable to the Am-type Multiform Pattern, and among Europeans of highly cultured and sophisticated personality and among professional artists, Patterns do now and then occur that bear a superficial resemblance to the Am-type Pattern.

Plate 54 is an example of a European Multiform Pattern and will be fully discussed in Chapter Ten. It shows characteristic differences from Am-type Multiform Patterns in three respects: (1) It occurs in the middle of a series of Patterns, the items composing it having relevance to similar items that have appeared before; (2) the colours are used separately in individual blocks, whereas in all Am-type Multiform Patterns known to us they are combined; and (3) the shapes of this Pattern – the relation of the blocks of pieces to each other in respect both of colour and form – is derived from the meaning (to the maker) of the blocks of pieces taken individually, rather than from the formal qualities of the Pattern.

Patterns of exactly the type of Plate 53 have not so far been found in European collections, but Plates 55 and 56, made by a gifted young woman of British descent from Argentina and by an English girl of sixteen respectively, are to some extent comparable. These will be

Description of the Test

discussed in Chapter Ten. These two Patterns are the nearest that we have so far found which resemble the Am-type Multiform and are included to point the difference rather than the resemblance.

To sum up: Multiform Patterns are Patterns without Recurring Form in which a number of separate groups of pieces (with or without the addition of single pieces) are deliberately arranged over the whole area of the tray and regarded by the maker as together forming a single Pattern. An interesting point about this class of Pattern is that to the majority of American critics with whom these Patterns have been discussed, the unity of the Pattern is obvious, while among European observers it is only those whose work lies in modern architecture or design who are able to see it.

(ii) Composite Patterns

In contradistinction to Multiform Patterns, in which separate groups of pieces constitute a single Pattern, the term Composite Patterns describes Patterns that consist of groups of pieces all of which touch each other, and in which many different arrangements of the pieces occur combined in a non-symmetrical manner.

Plates 57 and 58 are two examples of this type of Pattern made by American subjects. Plate 57 was constructed with great care and deliberation by a creative, well adjusted young American woman psychologist, who found it satisfying. In this Pattern an arrangement of mixed forms arises from an integrated base and, using the area of the tray as a background, displays a complex configuration of a composite type. It has grace, ingenuity and originality, but of a kind quite foreign to European Pattern makers.

Plate 58 was made by a girl of seventeen and three-quarters attending an American High School, and was described by an American anthropologist in the following words: 'This seems to me a very beautiful and characteristic American pattern. Asymmetrical but balanced. A solid base and airy structure; full use of all materials, both form and colour well distributed. It grows from the lower left corner which is basic, germinative'. This description was fully borne out by the current report of the psychiatrist who collected the pattern: 'Otis test I.Q. 138. Last term of High School. Excellent marks through High School, and a member of the Seminar Group, chosen for scholarship and personality.' Two and a half years later the psy-

Abstract Patterns Without Recurring Form

chiatrist wrote 'She is going into her third year at College, where she is taking the five year course on the "Co-operative plan". She is happy and successful'.

In European collections, Composite Patterns are occasionally made by well adjusted people. Plate 59 made by a British film director illustrates a Pattern of this kind. It will be immediately seen however that although the irregular disposition of the pieces is somewhat similar to that in Plate 57 yet the characteristic European differences remain. Comparison of these two Patterns will be considered in detail in Chapter Ten. No Pattern strictly comparable with Plate 58 has so far been found in European collections. Plate 60 made by a quiet, competent Swedish boy of nine years eleven months (I.Q. 98), has some of the same characteristics, but in an inverted direction. Here there is also a solid foundation line from which the Pattern extends, with a fringe of separate pieces. At this point, however, the likeness ends.

The classification Objective Experimental, which we found in Patterns with Recurring Form, occurs in this grouping also. Plate 61 illustrates this type. It was made by a seventeen year old American boy (I.Q. 143) during his last half year in High School. He was reported as being a member of a Seminar Group chosen for higher scholarship and leadership in High School, and in his University he gained an honour based on scholarship.

In this Pattern black and blue equilateral triangles are experimented with in the production of a single and a double hexagon. Diamonds are used in two of their basic modes, to form half a bigger diamond and to be used in combination with the squares to give an effect of perspective. The variation of colour grouping, black and blue for hexagons, yellow and red, and red, white and blue, express the perspective portion of the design. As in Plate 29 one piece is deliberately altered to break symmetry where two green pieces are added to the base of the Pattern in order to prevent too great a symmetry of colour.

The fact that Plates 58 and 61 were made by successful American subjects has been emphasised because of their superficial similarity to Patterns made in Europe by unsuccessful subjects, of which latter Plate 62* is an example.

This Pattern is discussed in Chapters Eight and Ten.

Description of the Test

Composite Patterns of this type are also made in America by disturbed subjects. Plate 63 illustrates such a Pattern; it was made by a Grade VII schoolboy of fourteen, said to be unable to read and to be aggressive and disorganised in behaviour.

(iii) Diffuse Patterns

This term describes Patterns in which isolated pieces, either placed alone or intermixed with very small irregular groups of pieces, are laid over the whole area of the tray, and to the maker, appear to form a single Pattern. Plate 64, made by an American Rhodes scholar at a British University, is an illustration of this class. From a purely objective point of view, without regard to the intentions or opinion of the maker, such arrangements occur also in Europe, but in no case (at least so far as present experience goes) as a deliberate expression of intention in a well adjusted individual of more than early school age. Patterns of this sort when they occur in Europe are made by very young children, or by individuals suffering from emotional or psychotic disturbances, and are therefore, when they occur, of diagnostic significance.

(iv) Collective Patterns

These occur now and then among Patterns without Recurring Form. The essential difference between Collective and Multiform Patterns lies in the intention of the maker. In both, several separate blocks of pieces appear disposed about the area of the tray. In the Multiform type, every detail both of the composition and design of the individual blocks of pieces, and also their arrangement on the tray is intentional and designed; in Collective Patterns there is no relation between block and block, and the arrangement of blocks and/or pieces on the tray is fortuitous. But since Collective Patterns without Recurring Form are rare, and since by definition the individual groups of pieces must fall in the Slab group, such arrangements are more usefully considered as belonging to the group of several small or large Slabs.

3. SINGLE PATTERNS PLACED FREE IN THE AREA OF THE TRAY

(i) Slab Patterns

It is in the group of Patterns without Recurring Form defined as Slab

Abstract Patterns Without Recurring Form

Patterns, that the greatest difficulty in classification and interpretation between Eu-type and Am-type occurs.

A Slab Pattern is a Pattern in which a number of mosaic pieces are placed either closely or loosely in juxtaposition to each other, without the creation of an overall symmetrical shape. It is essentially a single Pattern and free of the edge of the tray, though Slab Patterns *can* be repeated in the same composition, and one or several of these may be attached to the edge of the tray. In that case an overlap of classes occurs, because these patterns can also be termed Collective (see 2.(iv) above), according to the point of view from which the classification is being made. In European collections small Slab Patterns, free in the tray, very rarely occur; the ones that do occur are generally large and partially attached to the edge.

When Slab Patterns occur in European collections they have a uniform significance. The conception of Pattern in Europe having a basic connotation of symmetry, Slab Patterns, when they occur, represent either a stage in the development of normal children, or are made by persons during the course of their analysis, or are diagnostic of the presence of emotional disturbance or psychosis in the maker.

In collections made in the U.S.A., however, the position is entirely different. In the U.S.A. it is found that individuals of good inherent intellectual endowment and satisfactory adjustment to life can make this type of Pattern. Considerably greater attention has therefore to be paid to the detailed structure of these Patterns in collections made in the U.S.A. than in those from Europe.

Such Patterns divide immediately into two types: Designed Slab Patterns and Simple Slab Patterns.

(ii) Designed Slab Patterns

This term describes a pattern of a Slab nature that has been deliberately constructed as such by the maker, and which is found to be pleasing and successful both by the maker and by independent American critics. In contrast with this, Simple Slab Patterns are Slabs in which neither of these conditions is fulfilled. So far, Designed Slabs have always been found to be placed freely in the area of the tray, but experience with Am-type Patterns is as yet too limited to warrant any generalisation on this point. So far as our present knowledge

Description of the Test

goes, Designed Slabs do not occur in European collections of Patterns made by well adjusted people.

The making of Designed Slab Patterns appears to come about through a process, that is different from the Pattern-making process in Europe, since the question of symmetry can hardly be said to arise, and the geometric qualities possessed by the pieces carry little interest to the subject.

Plates 65 and 66 are examples of Patterns of this kind made by well adjusted young people. Plate 65 from Dr Ursula Stewart's collection of High School students, was made by a girl of seventeen years eight months, concerning whom the report runs: 'Otis I.Q. 130, very superior; Honor and Merit marks through High School. She is a member of a Senior Seminar who are chosen on the basis of scholarship, purpose and leadership. She is happy, quiet and self contained, and accepted for College next year. She has many friends, and always did well at school.'

Plate 66 is an example of a designed Slab Pattern made by a Grade VI schoolboy from one of the Southern States of the U.S. concerning whom the report runs as follows: 'A normal home: good economic level: normal child both at home and at school. He always rated in scholarship and conduct all through the grades; dependable to the last degree . . . showed considered initiative and worked well with people; no outstanding talents in any of the arts but a better all-round fellow you just wouldn't wish to have.' Occasional Patterns of this type made by well adjusted American adults have also been noted.

An interesting variant of Designed Slabs is the Designed Slab that contains interior space. Place 67, made by a High School girl of fifteen years ten months (I.Q. 121) is an example of such a Pattern. Here ten pieces in five colours are arranged irregularly in a ring, two being juxtaposed geometrically, and the others either touching at their points or with their sides touching but not matching in length. The pattern is placed centrally on the tray and the space enclosed is irregular. Thus it is not a Hollow Centre or a Defined Central Space, nor is the whole a circle in the sense in which this word is used in Chapter Nine, page 272. This type of Pattern is not uncommon, and is felt to be pleasing or humorous by the subject who makes it, and also by American critics. There is no counterpart in Europe.

Certain American workers with experience of this test, such as Dr

Abstract Patterns Without Recurring Form

Ursula Stewart, find it possible to distinguish between Designed and Simple Slabs with considerable accuracy, and with greater experience it is probable that American workers will be able to describe this difference in words.

(iii) Simple Slab Patterns

In contrast to the Designed Slabs given above, Plate 68 is an example of a Simple Slab Pattern. As would be the case in Europe, the report on the maker of this Pattern indicates the presence of emotional disturbance. The report on this child runs as follows: 'A small, thin, homely little girl of sixteen (I.Q. 90), with sloppy dress and dirty hands, brought for fear of going to the dentist for treatment badly needed for her front teeth.'

In looking for Simple Slab Patterns in British collections to compare with Plate 68 it has only been possible to find examples made by children under twelve. Plate 69 made by a girl of six (I.Q. 160), gives the general character of such Patterns.

Comparison of Plates 65 and 66 with Plate 68 and with the Eutype Slab Patterns show that much more study is needed before it will be possible to define the principles by which those Slabs that represent successful, as against unsuccessful, adjustment to life are to be distinguished. For the present all that can be said is that, looked at carefully, the interior structure of Slab Patterns will be found to fall into five classes:

- (a) Patterns in which the vast majority of the pieces are juxtaposed in a manner that does not use the geometrical qualities of the pieces.
- (b) Patterns in which all, or practically all, the pieces are used in a geometrical manner.
- (c) Patterns in which both modes of use of the pieces occur.
- (d) Patterns in which interior space occurs.
- (e) Patterns with a fringe of loose pieces, or in which the ground of the tray appears between the pieces.

(iv) Colour in Slab Patterns

Colour in Slab Patterns is used very variously. In our limited experience no single colour Slab Pattern has so far been met with, although in a number of cases vague circles made of a single line of white pieces have been found among Am-type Patterns. In most

Description of the Test

Slabs, whether Designed or Simple, the use of colour would be described as indiscriminate if the Patterns were made by Europeans. But it is quite clear from the way in which Designed Slabs are constructed that this is by no means true of this type of Pattern; instead the colours are carefully and deliberately selected and placed, although to a European eye the underlying ground of selection is often difficult to perceive.

Now and then however a Centralised Pattern without Recurring Form appears in which blocks of colour are used in an easily recognisable form. Plate 70 made by a High School girl of eighteen and called 'A study in colour', is an example of such a Pattern. Here black and red are used in blocks fitted together for the most part in a geometrical manner to give a pleasing effect. The only Pattern it has been possible to find among European collections in which the colour of the pieces is used in somewhat the same ways is Plate 71 made by a British architect. Here a zig-zag line, first of yellow and then of white pieces, runs through an irregular mass of pieces arranged compactly and composed of blocks of all the six colours.

Dr Stewart and Dr Lejand, in their paper on American and British differences, analyse thirty-one Slab Patterns forming 12.4 per cent of a group of 250 patterns collected from High School students in the U.S.A. and give the background of a number of these. From this investigation and from our own experience it would appear that Designed Slab Patterns are comparatively rare, and much more study needs to be made of them before it will be possible to estimate with any sureness what are the mental and emotional characteristics in an individual that lead to the making of this type of Pattern, and what is their diagnostic significance.

4. INCOHERENT PATTERNS

At the end of all classifications of Patterns comes the group Incoherent Patterns. This term was originally designed to embrace all Non-Representational or Conceptual Designs that were neither Symmetrical in form nor deliberately Asymmetrical. With the greater understanding of the possibilities of the test that has come through American experience, and with the introduction of the classes described in the preceding sections of this chapter, the term has come to be limited

Abstract Patterns Without Recurring Form

to those examples of Designs formed in response to the test that would be accepted on both sides of the Atlantic as being wholly incoherent. The characteristic of these Designs, wherever they occur, is the complete absence of form of any kind, either, in the Eu-type or the Am-type sense. This type of Pattern has not been illustrated because of its rarity; it indicates a profound degree of neurosis or psychosis.

5. THREE-DIMENSIONAL PATTERNS

As described in Chapter Three, in these Patterns a number of pieces are arranged on top of other pieces already placed on the tray, or placed so as partially to cover other pieces, thus altering the effect of the Pattern in form or colour or both, and varying the depth. This use of pieces occurs in Patterns without Recurring Form as an incidental element varying the depth of the Pattern; but so far a three-dimensional element has not been found as a major characteristic of Patterns without Recurring Form as frequently as in Patterns with Recurring Form.

PILING IN PATTERNS

Some American subjects find considerable pleasure in using piles of pieces in their Pattern. They take a block of pieces out of the box and spill them or run them down, as with playing cards, sometimes producing a pleasing but unreproducible effect. The result can be a striking and attractive arrangement or great originality, which cannot be illustrated except by photography.

The same impulse appears now and then in European subjects, but in the main, in conjunction with neurotic or psychotic disturbances, or as an irrational and non-pleasing element in the completed Pattern. No example of the first types of piling has yet been met with in European collections.

PART II: THE USE OF THE TEST

CHAPTER FIVE

THE USE OF THE L.M.T. IN THE STUDY OF CHILDREN

(with two Tables)

Illustrations referred to in this chapter in the order in which they occur:

Plates: 76, 1, 83, 131, 133, 72, 134, 73, 74, 75, 132, 69, 77, 95, 136, 78, 79,
80, 81, 82, 9, 84, 85, 86, 87, 88, 89, 90, 110, 17, 91, 92, 93, 94.

Figures in the text: 10, 11, 12, 13.

1. INTRODUCTION

The brightness and clear colours of the mosaic pieces make an immediate appeal to children. In our experience with European children the test is enjoyed by children of all ages, so that performance of the test is popular and Designs are easily obtained. The test therefore gives us a new instrument for the direct study of children's responses to a creative material.

Analysis of the Designs produced by children can be approached from two angles.

(i) Study of the development of the responses of individual children during the period of growth.

(ii) Study of differences in the responses of children of the same age, and the light these throw on differences in temperament and ability.

Both lines of approach are fruitful. The L.M.T. thus provides a useful instrument for increasing our understanding both of the potentialities of different children within the limits of a given culture; and of the relation of the development shown by individual children to the general pattern of development for all children.

In order to bring out the full potentialities and limitations of the Test as applied to children certain general propositions must first be considered.

As already pointed out, the essential fact about the L.M.T. is the

The Use of the Test

variety of the facets of the responses that it provokes. It is in this respect that it differs most fundamentally from other basic tests such as the Binet-Simon in any of its modifications, or the Gesell tests of development. In the designing of these tests, the aim at each stage has been to select points for test administration, the responses to which will give definite answers to questions concerning certain elements of ability or understanding that can be isolated from the total personality, and which taken together will give a reliable picture of the inherent endowment of the child.

Such separation of one specific quality from another is not generally possible in the L.M.T., which includes so many aspects of personality and innate ability in one response that standardisation of the Binet-Simon or Terman-Merrill type would require a very large scale study, with extensive analysis of the interlocking factors, and this has not been attempted. In view of the influence of culture* on the results of the test and our inadequate understanding of this, such an undertaking would in any case appear to be premature.

Another line of development in which the L.M.T. has proved of value is the insight it affords into the processes at work in a subject at the moment of his response. Study of the responses of schizophrenic patients, mental defectives and children throws new light upon the characteristics they display in common, and upon their differences. As will be explained in the next chapter, the L.M.T. can provide a delicate instrument for detecting arrests and deviations in growth and development, including in many cases the nature of arrest in educational development.

For successful use of the test, emphasis must therefore be placed on a detailed knowledge of the test itself and extensive practice in reading the responses, rather than, as with many other tests, upon statistical evaluation of large numbers of Designs.

Owing to the very wide variety of Designs that occur, and the relatively small number of illustrations that can be allotted to any section of this book, the selection of illustrations presents great difficulties, since so many aspects of the test call for illustration and yet only those can be included that are essential to a basic understanding. In all that follows, this difficulty has been borne in mind and only those

* See Chapter Ten

The Use of the L.M.T. in the Study of Children

aspects have been described and illustrated that will form a sound basis for further work.

2. GENERAL STUDY OF DEVELOPMENT IN CHILDREN AS REFLECTED IN THE L.M.T.

(i) Preliminary considerations

Before the L.M.T. can be usefully employed in the study of development in children, it is essential to sort out the various aspects of the test and to consider separately the elements in the child to which each aspect will act as a stimulus.

The material composing the test can stimulate the following reactions in children:

- (a) A sensuous response to the physical qualities of the pieces.
- (b) Perception of the shapes of the pieces, and of the pieces seen in different positions.
- (c) An experimental response to the effects of juxtaposition of pieces.
- (d) Perception of the space of the tray either as an independent space with defined edges, or as providing a ground to the figures made by juxtaposed pieces.
- (e) The fact that pieces placed end to end produce a line, evokes the same type of reaction to the test material as that produced by paper and pencil, or paper and coloured crayons (Plate 76). This is called the Drawing-Materials Reaction.
- (f) The fact that pieces, when they appear together on the board, can also produce masses, brings them into line with the wash effect of paint and allows of the production of Representational Design by area rather than by line (see Plate 1).
- (g) The fact that the pieces can be superimposed on one another, gives a perspective effect that results from certain combinations of the pieces, and provides further possibilities of plastic effects (Plate 83).
- (h) Increasing perceptual ability in the child makes possible increasing complexity in design and brings out the relation between imagination or phantasy and executive ability. This relationship is particularly interesting in small children, mental defectives, and schizophrenic patients. A comparative study of them will be found in this chapter and in Chapters Six and Nine.

TABLE ONE

STAGE	A	B	C
5	WAVERING LINES	CHANCE ASSOCIATION OF PIECES	PIECES ALONG EDGE OF TRAY
6	PAIRS	VERY SIMPLE SLAB	GROUPS AT EDGE
7	PRE- FUNDAMENTAL	LARGER SLAB	MORE DEFINED GROUPS AT EDGE
8	FUNDAMENTAL PATTERNS	PAIRS IN AN IRREGULAR GROUP	NO CHANGE
9	NO CHANGE	NO CHANGE	NO CHANGE
10	ELABORATED FUNDAMENTALS	COLLECTIVE PATTERNS	NO CHANGE

SHOWING LINES OF DEVELOPMENT (up to age 6)

D	PERCEPTION OF AREA OF TRAY		
	1	2	3
EARLY KITE REACTION			
PIECES USED AS DRAWING MATERIALS			
EITHER FORM PERSISTS			
NO CHANGE			
FOX-REACTION AND PRE-RHINOCEROS	PIECES COVERING WHOLE TRAY	ATTEMPT TO FILL TRAY WITH ROWS OF PIECES	PRE-FRAME AND ITEM
KITE REACTION WITH MANY PIECES	GROUPS (GEOMETRICAL)	PATTERNS USING WHOLE AREA OF TRAY	UP TO FRAME AND ITEM

The Use of the Test

Except in severe mental defectives and deteriorated schizophrenic patients, the above possibilities occur in every variety of combination in individual responses. The proportions in which they occur in any given Design constitute the differences between individual children of the same chronological age, and give depth to the study of the ground plan of general development.

(ii) Children under five years old (Stages 1 to 8)

As already pointed out, it is the basic physical qualities of the pieces – their brightness, smoothness and colour – that are first perceived by and that first attract young children. In average children between one to two years of age, these are the only qualities of the pieces that register.

The following are the usual stages of response :

Stage 1. Since the sensations of the interior of the mouth and the mucous membrane of the lips are the only aspects of his body of which an infant has any intimate knowledge, the mouth is normally the organ through which a young child makes contact with and evaluates the outside world. The first reaction of a young child will therefore be to make darting grabs at the pieces with his hands, and to convey those he succeeds in grasping to his mouth. This type of response parallels that of certain deteriorated schizophrenic patients (see Chapter Nine, page 259f) with the difference that the response in infants is active, whereas, as Dr Ellenberger explains, with the profoundly deteriorated schizophrenic the pieces have generally to be offered to the patient.

Stage 2. At a slightly older age – varying in European children from eighteen months to two and a half years – the child sees pieces in the box as blocks rather than as individual pieces; he therefore grabs at these blocks with both hands, picks them up, and then, by the simple process of opening his hands, allows them to fall; he then repeats the action. All this is accompanied as a rule by gurgles and smiles.

A little later in development, the blocks of pieces are thrown down rather than allowed to drop.

As far as our observation at present goes this stage does not appear in schizophrenics.

The Use of the L.M.T. in the Study of Children

Stage 3. Between the ages of two to three years the child again begins to pick up single pieces, but he now does so in order to examine them by sight and touch rather than with lips and tongue. Piece after piece is taken up in this way, felt, turned over, looked at carefully and then either dropped, or in the later development of this stage, actually placed upon the tray. Interest is however completely focussed upon the pieces; the tray appears only as a dimly perceived background upon which the pieces can be placed or allowed to fall. This stage also does not appear in schizophrenics.

Stage 4. A rudimentary perception of space ushers in the next stage. The child, having examined his pieces, now places them deliberately on the tray. Towards the end of this stage he shows signs of observing that the pieces, as he has placed them, are separated from one another (see Figure 10).

This stage corresponds in its general outline with the *Second degree* of Dr Ellenberger's study of Schizophrenic deterioration (see Plate 131) with this difference however that children, having no previous experience of space, are not as yet aware of either the edge or the corners of the tray.

From this point different lines of development in individual children begin to appear.

Stage 5. At about three to four years of age, four such main lines can be distinguished.

Class A* The placing of pieces anyhow upon the tray develops into the making of wavering lines composed of single pieces placed either side by side or with their points touching, and set in any direction upon the tray (see Figure 11). Dr Ellenberger finds the same branching out of different possibilities at the corresponding stage in the process of deterioration in schizophrenics, as we have observed in the process of development in children. When, however, examples of the Designs appearing at this stage in the two processes are compared, certain interesting differences will be observed (See Figure 11 and Plate 133). In Figure 11 there is no choice of colour, and the arrangement of the pieces is haphazard; in Plate 133, however, a certain

*See Table 1.

The Use of the Test

sophistication appears both in the lines themselves and in the use of colour.

Class B Pieces at first placed anyhow on the tray at varying distances from each other develop, through the chance pushing of one piece by another piece, into loose distributions of associated pieces placed anywhere on the area of the tray (see Plate 72). Here an interesting difference occurs between the child and the schizophrenic. This stage

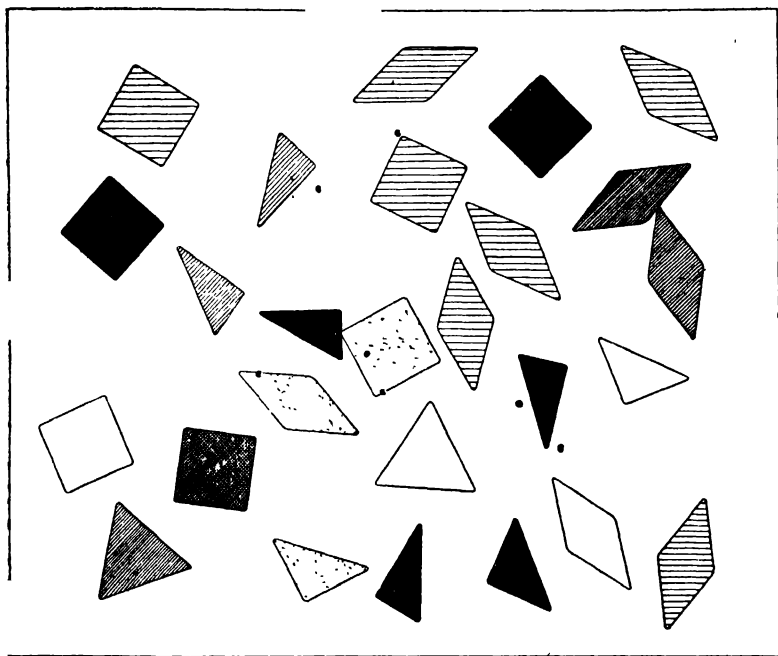


Figure 10: Scattered single pieces (child)

occurs in schizophrenics also as illustrated in Plate 134, but owing to the greater sophistication of the adult, the groups when formed have much greater coherence.

Class C Single pieces begin to be placed along the edge of the tray, the resistance exerted by the edge to further movement of the pieces over the area of the paper bringing the pieces to rest against it (see Plate 73). The presence of the edge of the tray enables the child to realise earlier than would otherwise be the case some of the shape-

The Use of the L.M.T. in the Study of Children

relations of the pieces, and so to make a primitive Pattern which, without the edge, would not have come about. This stage has so far not been observed in the schizophrenic.

Class D Resemblances between either single pieces or groups of pieces to other objects that the child knows, are suddenly perceived by some children and given a name. Thus, a single diamond piece, or two scalene triangles with their long sides and points put together,

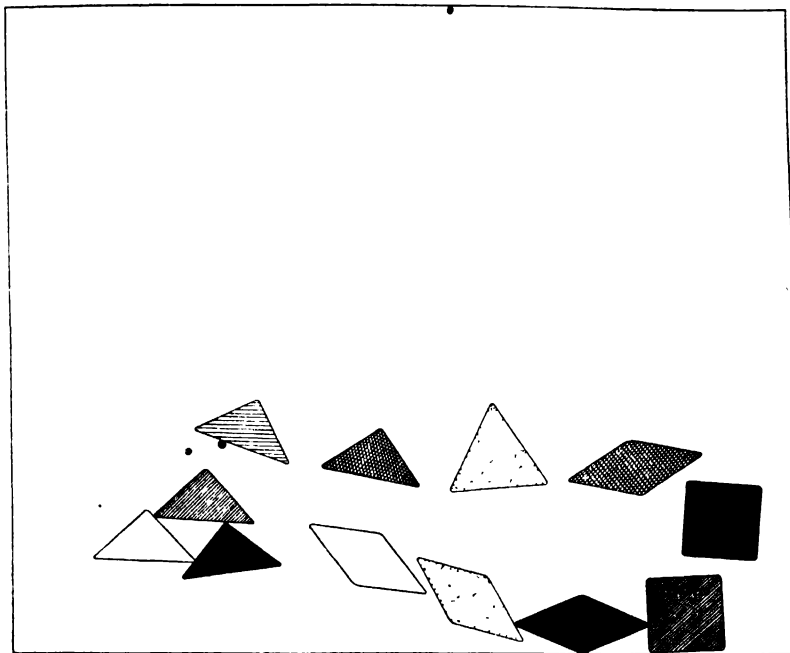


Figure 11: Wavering lines (child)

come to be called by the child 'a kite' (see Plate 74, described in Chapter Two, page 51). This has so far not been observed as a separate phenomenon in the regressed schizophrenic.

These four classes illustrate four types of response to the test. In *Class A* the pieces are placed independently but yet with some actual space relation to each other. In *Class B* the pieces are grouped together by chance so that they develop some kind of relationship, colours and shapes being mixed. In *Class C* the elementary connec-

The Use of the Test

tions between the pieces are beginning to appear, helped by the presence of the edge of the tray. In *Class D* associations begin to appear between the shapes of the pieces and objects known to the child.

It is from this stage on that the differences in the responses of individual children become striking.

With the appearance of this Stage, the rate and type of development in different children of the same chronological age has already begun to vary as greatly in response to the L.M.T. as to any of the standard tests of development. This variation is found not only in the rate at which the individual child passes through the standard stages of development, but also in the actual line of development he follows. It is therefore probable that in many collections of responses from normal children of a given chronological age, examples will be found that belong analytically both to earlier and later stages of the normal course of development. Until the part played by culture has been ~~extensively~~ studied and some degree of accuracy obtained at given chronological ages, it will not be possible definitely to rate any given child – as can be done in the I.Q. tests – in relation to the average performance for his age. The absence of this ability however is not really missed in the routine use of the L.M.T. for the study of children, since it is balanced by the scope and intimacy of the information afforded.

The following pages, therefore, attempt only to offer a description of the general lines of development that are observable in the early Stages up to the point where all lines of development can appear in different children of a single age group. When this point is reached, the chronological age is taken as a basis, and an analysis is given of the general features of the responses to be found at each age in our collection of European children. Every attempt has been made to make these observations as accurate as possible, but certain considerations must be adduced that may in future turn out to have a bearing upon the results.

The main bulk of these collections was made before the last war. At that time education in Britain was divided into two parallel streams: State education on the one hand, and Preparatory and Public school on the other. Dr Kerr showed in 1938 that certain cultural differences were observable between the responses from the children

The Use of the L.M.T. in the Study of Children

attending the two sets of schools. After the war and the passing of the *Education Act* of 1943 this situation has considerably altered, and it may be that responses obtained from British school children in future will show a different distribution from those described here. It is for this reason that the *process* of development of response in children should be well understood. The L.M.T. is an instrument of exploration rather than of standardisation; we are moreover too much at the beginning of an understanding of its possibilities to be able as yet to make hard and fast generalisations. The elements of the test, and the significance of each type of response remain fixed, but much work will have to be done before we can speak with certainty about the distribution of these elements among any section of the child population.

Stage 6. At this Stage definite relationships between the pieces begin to appear, and these are to some extent deliberately manipulated by the child. The classes into which the previous stages have been separated tend, in this Stage, to develop as follows:

Class A Here the child discovers that when pieces whose size are of the same length are placed contiguously, a new shape appears. The pleasure this gives to the child induces him to go on copying this arrangement as long as his interest lasts; the tray thus becomes covered with pairs of pieces sometimes of the same shape, sometimes of more than one shape (see Plate 75). Once again, when this phenomenon appears in schizophrenia there is a greater degree of sophistication in the colour and form, and less freedom of movement and precision in the application of piece to piece (see Plate 132). Although as far as our experience goes at present it seems probable that *Class A* children are the first to discover this possibility, it may appear at any age in the patterns made by any child according to its rate and type of maturation.

Class B Here the children tend to progress towards a close juxtaposition of a number of pieces in a simple form of Slab; their interest lies in pushing a new piece against the sides of pieces already placed, without interest in or experiment with the exact correspondence of the lengths of the sides of individual pieces with one another (see Plate 69).

Class C Here the children, having once discovered the edge of the

The Use of the Test

tray, tend to develop perception of space and a realisation of the simpler relationships of pieces to each other in regard to the edge (Plate 74). This Pattern is a good illustration of a number of points. It was made by an English girl of five years four months with keen enjoyment and great care given to the construction of each separate part.

Against the right hand edge is a row of eight squares of each colour; along the top edge are five pairs of diamonds, each in a different colour, filled in with half squares of the neighbouring colour. The left edge has a row of double equilateral triangles; along the bottom are six pairs of scalenes in all the available colours; the pattern is finished with four squares in the middle. In this pattern is most interestingly shown the interaction of two factors that are common at Stage 6: the pairing of pieces, and the impulse to use each of the colours impartially. The inability of the child of this age to perceive space is very neatly shown by the equilateral triangles along the left hand edge. Here the child has used all the six colours in a regular way, and in the same order as the use of the colours along the other three edges; but because she started with the red triangle against the corner there was not enough room to complete this pair, and she had not reached a stage of maturity when she could perceive that there would be plenty of room for the second red piece if the whole line were slid downwards.

Class D From the Kite Reaction certain children proceed to use the pieces as if they were drawing materials, placing the pieces (usually diamonds) end to end as in Plate 76. The subject thus represented will be the same as the child of that age would present with pencil and paper, and the use of such non-linear material as the mosaic shapes to form lines supplies a good answer to those critics who have urged that additional slender oblong pieces are necessary to enable lines to be made.

This use of the pieces is sometimes observed in Representational Designs of schizophrenics and mental defectives.

Stage 7. Here interest in the juxtaposition of more than two pieces begins to develop.

Class A By this time the stage has been reached when children are no longer satisfied with combinations of two pieces, but conceive the idea of experimenting with the addition of further pieces to the basic pair. The equilateral triangle is the piece most commonly chosen. Figure 12 is a good example of the result. The way these pat-

The Use of the L.M.T. in the Study of Children

terns were arrived at by a bright four year old boy gives a good picture of a normal child's total response to the test.

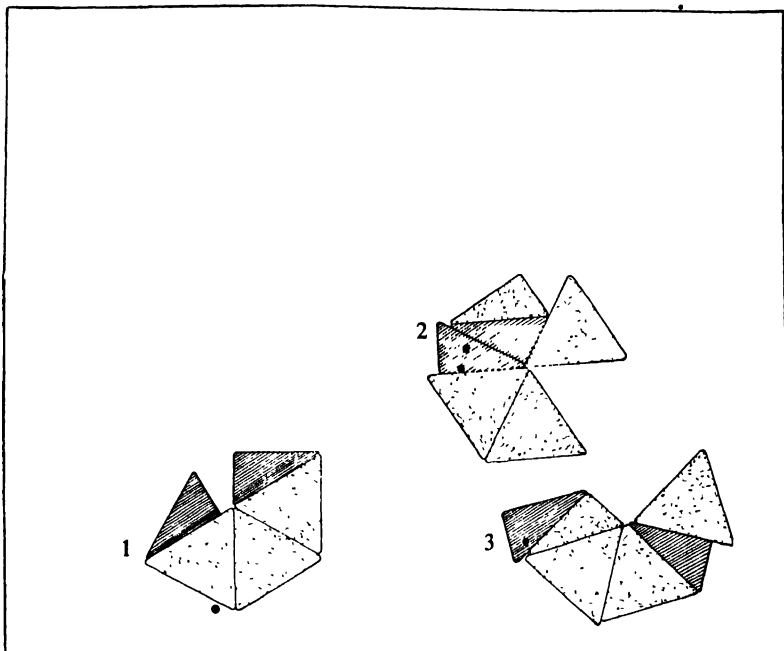


Figure 12: Collective Prefundamental Patterns (child)

'C started by taking the various shapes out one at a time, saying, "That's yellow . . . blue . . . white" etc. He then pushed a few pieces together, laughed at the resulting pattern and pulled it to bits, putting the pieces back in the box again. He started again, putting the pieces singly on the tray, giving a satisfied little grunt with each one. Then he put them back in the box again, saying, "I like white and blue . . . they are all different colours". Three times he put the pieces back and started again, taking pieces out singly, talking to himself, "That goes like that" etc. He laughed at them, "Funny pattern, isn't it?", then flicked it away with his fingers. He tried standing the pieces up on end. He had not more than eight pieces on the tray all the time; he kept re-arranging the shapes he made and did not leave any set shape for very long, but kept experimenting and pushing them around. After fifteen minutes he made Pattern (1); then he said "I'm going to do another pattern" (2); then he did (3). Time taken in all, twenty-five minutes'. *O.R.**

* Whenever *O.R.* occurs, it marks a quotation from an actual observer's report.

The Use of the Test

It is important that careful note should be taken of the exact mode in which such Patterns come about. Figure 12 has been chosen because both the child's comments and study of the Patterns themselves make it clear that Patterns (2) and (3) were deliberately brought about through realisation of the results achieved in (1). Strictly speaking in the three groups of pieces in this design two classes overlap: that of Pre-fundamental; and that of very simple Slab. The yellow pieces in (1) form a Pre-fundamental, the addition of the two blue pieces showing that the child was unable to complete the Fundamental Pattern. In (2) and (3) other attempts have been made to produce a similar effect but the child has achieved a Slab rather than a Pre-Fundamental.

Class B This however, does not occur in patterns made by children of *Class B*. Here, although the resulting Pattern may contain parts in which similar geometrical combinations appear, yet these have come about in the same way as the non-geometrical juxtapositions: that is, by the child pushing the newly added piece against the edge of the group of pieces until his interest is exhausted. In this way Slab Patterns of greater complexity arise. Edge Patterns when they appear at this stage, are in the form of small groups of pieces placed anywhere against the edge of the tray.

Class C The groups of pieces become more defined.

Class D Earlier forms persist.

In some children combinations of Stages 5 to 7 occur in the same response.

Stage 8. At this stage a true Pattern emerges for the first time.

Class A A point in development is reached where certain children, in composing Patterns such as Figure 12, become aware of what they are doing and continue to repeat geometrically fitting juxtapositions until the possibilities are exhausted. Thus, a slightly more mature child will continue to add equilateral triangles to each other until a complete hexagon is achieved. The appearance of this completed disc gives the child great satisfaction and he usually sets out to repeat his performance. Here can be seen the exact degree to which appreciation of the basic factors involved in the making of the hexagon has been achieved by the child. Plate 77 made by a very intelligent English girl of four and a half years illustrates this neatly.

The Use of the L.M.T. in the Study of Children

'M took out a handful of blue triangles and began fitting the sides together. Pushed the triangles together with quick confident movements, leaving space for the sixth at the top of the nearly completed hexagon. Saw at once that another triangle would fit the space and lifted it over the others and fitted it deftly into place. Sat back and smiled happily and with surprise saying: "It's a circle". Took a handful of yellow triangles and started in the same way as with the blue, but when she had put two together she added a third *alongside*, making a line; as these tended to slip she pushed them against the edge of the tray, added a fourth triangle and left it. Said "Now the green". Took out some red triangles and made a large triangle with four, then placed a fifth exactly in the centre of the side farthest from her. Said "Now the white" and took out a handful. Made a partial hexagon with four of the pieces and left it. Fingered various shapes in the box and picked out some white scalenes. Put the long side of the scalene marked (a) against the triangle and immediately put another next to it, which filled up the space. Put another scalene (b) correctly against the (a) piece and tried to do the same with the next piece but got this fourth scalene the wrong way round, and could not see what was wrong. Placed a fifth piece correctly against piece (b) and was very pleased when it formed an oblong. Tried unsuccessfully to repeat this with the last white scalene and pushed the others a little out of place, and left it. Returned to the red triangles and took out some red scalenes. Fitted three correctly round them, pushing the last triangle a little out of place. Started to do the same with the blue hexagon and in doing so pushed it against the edge of the tray. Tried to complete the ring of scalenes by standing up the sixth against the edge. When she saw it would not fit in she gave up and returned to the green, trying to fit scalenes between the block of pieces and the edge nearest to her. Then put one against the furthest side of the green block and for the first time got it the wrong way round. Fitted the remaining two scalenes and pushed (b) against the other two. When she found it pushed it out of shape she left it and returned to the yellows. Fitted yellow scalenes all round the edge correctly. She now seemed to have had enough, but would have gone on with the other colours out of a sense of duty, so it was suggested to her that she could stop now if she wanted to, to which she agreed.' *O.R.*

In this way the 'pairs-response' develops into the making of the simpler Fundamental Patterns. The correctness of this classification is shown by the continual appearance of these patterns in the responses both of children from five to seven years and of mental defectives and schizophrenics (see Plates 95 and 136). Parallel with this *A* type of response, children developing along the *B* line make a combination of a different kind. These children at first halt at the earlier Stage, and then combine their achievement of correctly matched pairs into an irregular group. There is no change in *Classes C and D*.

The Use of the Test

(iii) Five year old children (Stages 9 and 10)

As has been explained, any collection of responses from children of a chronological age above five will probably contain examples of all the previous Stages, and conversely these will tend to appear in all age groups. Usually there will be one or two gifted children in each age group whose responses are those of an average child of a later age.

In *Stage 9, Classes A, B, and C*, no change occurs. But at about five years, a type of response appears that is to form an important element in the responses of later years; but we have as yet no clue to the factors determining its appearance nor to how frequently it appears at this early age. This is the appearance of Designs in which the whole area of the tray plays a part. Arrangements of pieces that show this awareness of the tray as a whole have not been found before the age of five years; but in our collection of responses from five year olds these patterns occur, exemplifying the three main ways in which this perception of the area of the tray can be expressed. These three ways are given in the Table under headings 1, 2 and 3, shown in relation to Stages 9 and 10.

(1) The covering of the whole area of the tray with pieces not integrated with each other (see Plate 78).

(2) The use of pieces all of one shape and colour, arranged in rows, usually across the shorter dimension of the tray. Plate 79 made by a Danish child of five illustrates this type of Pattern. The apparent sophistication of colour choice in the diamonds on the right of the tray in this Pattern is an artifact arising from the fact that in the box the yellow and black diamond blocks are adjacent, and in his arrangement of them the child has followed the same method as in his use of the squares. He has taken out the eight available diamonds of each colour, but owing to the greater complexity of the diamond shape as against the square he has found it impossible to bring about the same result with these as with the squares.

(3) The whole area of the tray is involved in the placing of some pieces at the edge and some in the central area in a manner that foregrounds Frame and Item.

It is at the age of five that children show the most interesting variants, and both Abstract and Representational Designs will repay careful study.

The Use of the L.M.T. in the Study of Children

To take Abstract Patterns first (*Stage 10*). The procedure adopted by an intelligent child at this age is in important contrast to that adopted by older children in that, although the final result may closely resemble the Patterns of a later age, and be at times of astonishing complexity, yet the manner in which they are produced is entirely different.

The five year old child has as yet no capacity for imaging shape correctly, or for deliberately manipulating the relationship between one shape and another so as to compose a Pattern. What he does is to place one piece against another and then to notice the effect, and if this pleases him, to choose a similar piece out of the box and place it in a corresponding position, thus building up a configuration piece by piece. Observation of children of this age at work with mosaics makes it clear that each addition is to some extent a surprise, and that no configuration is planned beforehand; nor does the child realise the implications of the combinations that are in this way achieved by chance.

Thus the completed Patterns of children of five and six years are very deceptive in that they can so easily present an appearance of geometrical comprehension which in fact does not exist. For example, in our collection one pattern of a Winged shape resembles almost exactly that described as characteristic of seven year olds. This astonishing versatility, which so often disappears in later years, is due to the creative freedom of the five year old, together with the absence from his mind of formal Standard Patterns (see Plate 80, a Collective Pattern made by a Danish girl of five years nine months).

It is in the Representational Designs that the most important phenomena appear. Here two lines of development occur (*Stage 9, Class D*).

In the first of these the Kite Reaction and the Drawing-Materials Reaction coalesce. Some children make use of the pieces in somewhat the same manner as modern *montage* artists, in that the areas of the individual pieces are loosely combined to block out, as it were, an impressionistic presentation of an object. Plate 1 of a fox, made by a Swiss girl of five years, is a brilliant example of what can be achieved by some children in this way. Here an immediate impression of a living animal in an attitude of alertness has been perceived by the child in a momentary flash and the total *gestalt* produced by a loose

The Use of the Test

grouping of pieces of indiscriminate colour. The child herself found it quite impossible to understand why her elders were so much impressed by something she had achieved so easily.

The second line of development is shown in Plate 81 made by an English boy of five, who constructed silently and with great concentration during thirty minutes, a presentation of a railway station at night which he described as follows:

'That's the foot of the station' (pointing to the white squares); 'and those are the ends of the station' (red half-squares) 'because it's night' (i.e. red lights); 'and the train is in the station - that's it' (pointing to the arrangement of red and yellow scalenes); 'and that's the coal' (black scalenes); 'and that's the steam coming out' (white scalenes); 'and these are the stars' (yellow scalenes); 'and this is the moon' (yellow square); 'and these are clouds' (blue diamonds); 'and that is the dark, black sky above' (in a deep voice). *O.R.*

The essence of this form of response is deliberate and conscious sequence of *foci* with which the picture is constructed. At no point in this presentation before it is completed does the picture exist in the child's mind as a whole, except in the vaguest way. The picture is constructed as a child itemises a description to himself of the picture that is presented to him, his attention moving from one element of what is to him a total *experience*, to another, each being represented with the pieces nearest in his mind to his remembered shapes. A comparison between this mode and the Fox brings out a number of very interesting points about the picture making of small children. Plate 81 is related to the Rhinoceros Reaction in that it is constructed deliberately, special pieces being used because their qualities seemed to the child to express better than others the parts of his picture in which he was at the moment interested. On the other hand it is intermediate between the Fox and the Rhinoceros in that far less trouble is taken with the exact fitting of piece to piece than in the Rhinoceros.

(iv) Six year old children

About the age of six, several new phenomena develop. In *Class A* of Table 1, at *Stage 10* appear Elaborated Fundamental Patterns. This is a type of Pattern very frequently met with in later years; Figure 13 made by a boy of nine is a good example. An Elaborated Fundamental Pattern is a Pattern in which the core is made by one of the Fun-

The Use of the L.M.T. in the Study of Children

damental Patterns, and to which one or more rings of pieces are added so as to give an effect very commonly met with in ceramic tiles. A curious feature of developmental processes is that although very simple examples of an Elaborated Fundamental Pattern may occur in a brilliant child as early as four and a half (see Plate 77),

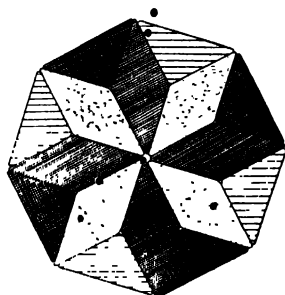


Figure 13: Elaborated Fundamental

after six it tends to disappear from view and to reappear only when deliberate construction of Pattern has become the rule, and so can appear as late as age fifteen. When it does occur earlier it will be found in combination with other types of arrangement in Collective Patterns. In *Class B* pairs in irregular groups develop into Collective Patterns. *Class C* shows no change.

Perception of the area of the tray now develops into variants of the three classes cited above, classified in the Table in the following manner :

The incoherent arrangement of pieces all over the tray develops

The Use of the Test

into combinations of groups of pieces arranged geometrically in juxtaposition to each other. They usually appear in close rows or grouped without any specific arrangements; but occasionally they are composed of blocks of separate Patterns pushed together or in lines.

The variant in which the influence of the edge of the tray predominates, shows all possible intermediate stages between that previously described and the fully developed classifications of Patterns using the whole area of the tray described in Chapter Three.

The third variant similarly shows various stages of development ranging from the early examples described above to the fully developed Frame and Item of which Plate 74 represents an early stage.

In *Stage 10, Class D*, the Kite Reaction reappears in a new form: children who have made quite large groupings of pieces in the manner described above, after they have been completed see in them a resemblance to some other object, and so call their Design 'a house' (in one case 'a pigeon house') although such a resemblance is not perceptible to the adult observer. This is a common reaction in mental defectives of all ages.

(v) Children aged seven to fourteen

From this point on the characteristic Patterns for the different ages of children are more conveniently represented in a table (see Table II). In each year it is the *first appearance* of any type of pattern that is noted.

(a) Seven year old children. At the age of seven, Designs begin to become classified according to the standard classifications and will be noted in the Table, new designs only being described in the text. Pre-Fundamental Patterns have now been left behind. Very small Patterns, (i.e. employing less than eight pieces) occur very rarely, and then are of a confused and unsuccessful variety.

New classes of Abstract Patterns. Proliferations of Fundamental arrangements are Abstract Patterns starting with a Fundamental which is then continued by the addition of similar pieces to make a large mass Pattern, sometimes with a few non-matching pieces at the rim (as in Plate 82). When diamonds are used in this way they are fitted against each other in a straight direction, and often projecting inwards from a corner. This form is occasionally found at six years.

The Use of the L.M.T. in the Study of Children

True Intermediate Patterns now appear. These are usually small. Occasionally a transitional form is found, in which two more blocks of compactly arranged pieces are attached to each other by their points, leaving interior spaces. Some children of seven years, however, achieve genuine successful Symmetrical Intermediate Patterns. Some of these show real distinction, but unfortunately when those in our collection were recorded the importance of the mode of construction had not yet been realised; information is therefore lacking to determine the processes by which these Patterns were achieved. In the most competent of these Patterns there is a combination of lines arranged either in a circular form with a small solid Pattern in the centre, or in symmetrically disposed curved arms. Where this does not occur the elements of the Pattern are still the simple combinations of, for example, diamonds and squares which almost make themselves. Although, therefore, the finished Patterns give the appearance of a thought out Intermediate Pattern, only a slight progress has yet been made from the procedure described on page 121. The increased manipulative skill of children of this age aids the achievement of a satisfactory Design.

Other characteristic Patterns are the following. The first consists really of lines of small Patterns arranged symmetrically on the tray, and therefore can be classified either as Collective Patterns or as a Pattern covering the whole of the tray. The individual items in this case tend to be formed either of Fundamental Patterns, or of very simple arrangements such as a central square piece with a symmetrical arrangement of four of the other shapes around it. In some Designs large agglutinations of pieces grow from one or other edges of the tray. The Pattern may, however, become more organised and follow the edge of the tray all round the area, giving rise to a simple Frame and Item. On the other hand, the large agglutinations may be found free of the edge.

Now and then an Abstract Pattern of defined shape free in the tray can be found, such as a Pattern made of diamonds with a central square in which the two vertical arms are separated from each other by a vertical space. This use of a vertical column of pieces with additions on each side produces an effect that could also be classified as an elementary Winged Pattern.

Representational Designs, which form so vivid and interesting an ele-

TABLE TWO

A B S T R A C T

AGE	COMPACT	INTER-MEDIATE	WHOLE AREA OF TRAY USED	EDGE OF TRAY USED
6-7 years	PROLIFERATED FUNDAMENTAL; ELEMENTARY WINGED	SMALL	LINES OF SMALL PATTERNS ALL OVER TRAY	EDGE PIECES IN LARGE AGGLUTINATION
8 years	SUCCESSFUL COMPACT	LARGE WITH CENTRAL CORE	PRIMITIVE, SPACED ALL OVER TRAY	CORNER PATTERNS
9 years	POPULAR	SUCCESSFUL	LINEAR REPETITIVE	PATTERN IN CORNERS AND ALONG EDGE, WITH ITEM
10 years	ORIGINAL CENTRALISED	RADIATING	COMPACT, FILLING TRAY	PATTERNS IN EACH OF FOUR CORNERS
11 years	CIRCULAR MOVEMENT	INTERIOR SPACE INCLUDING HOLLOW CENTRE		(a) PROJECTING CORNERS AND CENTRAL ITEM (b) GROWING (c) PENDANT
12 years	(a) WINGED (b) PIECES SUPER-IMPOSED (c) 3-DIMENSIONAL EFFECT OF PERSPECTIVE		PROLIFERATION OF ONE SHAPE FILLING TRAY	
13 years	(a) CRUCIFORM (b) "H" SHAPED			
14 years	TANGENTIAL			

SHOWING LINES OF DEVELOPMENT (ages 6 - 14)

P A T T E R N S

FRAMES	COLLECTIVE	IRREGULAR	REPRESENTATIONAL	USE OF COLOUR
SIMPLE FRAMES AND ITEMS	COLLECTIVE PATTERNS INCLUDING FUNDAMENTAL	LARGE AGGLUTINA- TIONS	SIMPLE SCENES	
LARGE FRAME AND ITEM FREE •FROM EDGE	SYMMETRICAL ARRANGEMENT OF SMALL PATTERNS AND SINGLE PIECES	LARGE SLABS	• FLOWERS (LARGE)	BALANCED, VARIEGATED
			(a) AMBITIOUS, PARTIALLY SUCCESSFUL, DESIGNED (b) SIMPLE 'RHINOCEROS'	DELIBERATE USE OF COLOUR INDEPENDENT OF FORM
EMPTY FRAME FOLLOWING EDGE	INTERIOR SPACE IN COLLECTIVE PATTERNS ••		• SCENE 'SAILING SHIP'	
			(a) COMPETENT SCENES (b) COMIC HUMAN FIGURES	
	MIXTURE OF ABSTRACT AND REPRESENTATIONAL	• IRREGULAR, 'CARD-HOUSE' TYPE		(a) ÆSTHETIC- ALLY DISCRIMINATING USE OF COLOUR (b) BLACK AND WHITE
•			(a) FACES (b) FIGURES IN MOVEMENT WITH ADULT SKILL	
				• WHOLE PATTERN WHITE

The Use of the Test

ment of five year old collections, are relatively infrequent at seven years. The Kite Reaction persists. Very simple scenes are sometimes made, such as a house made up of twenty-five squares with a line of diamonds and half squares along the upper edge of the tray termed 'sky', and a few green pieces along the lower edge termed 'grass'. If any other object is represented it will be something very simple and obvious (such as an aeroplane) and composed of simple lines of pieces. In general, the Representational Designs of this age use more pieces than those of earlier ages. In the collections of Designs produced by school children assembled prior to 1939, the cultural differences reported on by Dr Kerr began to be noticeable at this age.

(b) Eight year old children

New classes of Abstract Patterns. Big, competent, successful, Abstract, Compact Patterns begin to appear. Once again, evidence is lacking as to the mode of construction. But, competent as the final result appears, the elements of the Pattern continue to be either combinations of partial Fundamental Patterns, or of the results that come about inevitably through the successive addition of pieces to the main structure, through single additions, and obvious matching of sides. More attention tends to be paid to colour than in earlier years. It is nearly always arranged symmetrically. A new feature is the appearance of large Intermediate Patterns with a central core.

Response to the whole area of the tray in certain children results in balanced arrangements of groups of pieces and single pieces, giving the appearance of a primitive Spaced Pattern.

Corner Patterns occur which give an effect of successful geometric symmetrical combinations but actually arise in the way already described.

Representational Patterns. Flowers appear and they are large. Curiously, our English collection contains no deliberately constructed house at this age, but this may be due to chance. One amorphous mass of pieces containing interior space was, after completion, called by a child 'a house with a chimney and a window', but it bears no resemblance to this. One Spanish child of eight made a Scene of houses.

As regards the use of colour both balancing of colours and indiscriminate variegated arrangements appear.

The Use of the L.M.T. in the Study of Children

(c) Nine year old children. In this age group little that is new appears, but a striking change is seen in the Abstract Patterns. Many of these are still large, but the form and construction has mostly become conventional. A Fundamental Pattern is placed at the centre, and symmetrically balanced pieces are added round it to form Popular Patterns which are variegated in colour. By far the larger proportion are successful, though unsuccessful Patterns do appear.

The Intermediate Patterns are the most interesting. Among these we find the first deliberate use of colour, not just to balance symmetrical form but to add an effect of colour arrangement in blocks which add to and do not grow out of the structure.

New classes of Abstract Patterns: Linear Repetitive and Patterns along Edge with Item. Sections of Pattern can appear in the corners of the tray, balanced by further sections midway along the sides, and with a central Pattern; most of these are successful. Occasionally some of the very early types of Design reappear at this age.

Representational Designs. Three types are found: simple, direct, photographic representations of men, flowers and houses.

Ambitious themes carried out in symmetrically disposed pieces with only partial success.

(d) Ten year old children. In this year all patterns tend to show more definite organisation.

New classes of Compact Patterns placed centrally in the tray showing elements of originality. The diamond star frequently forms the centre of these Patterns which are differentiated by the disposition of colour. Sometimes the choice of colour is deliberate and gives a pleasing effect. For the most part the other Patterns exemplify the more elementary uses of the simpler pieces to form relatively large masses of symmetrically arranged pieces differing little from those of earlier ages.

Intermediate Patterns with radiating arms, constructed compactly from the sides of a central Fundamental or elaborated Fundamental Pattern. These have occurred almost exclusively in the Preparatory School group. In Elementary School children the general feeling of the patterns is longitudinal.

Awareness of the whole area of the tray appears in a fairly successful Compact Pattern completely covering the tray. One example of

The Use of the Test

Symmetrical, Compact, Successful Pattern in each of the four corners was made by a Swedish child.

Interior Space occurs in component items of Collective Patterns. Occasionally an empty Edge and Frame will appear.

Representational Designs. These are for the most part composed in a stereotyped, conventional manner, but with a definite suiting of the pieces chosen to the Design they are to represent. Plate 9 is an exceptional example of this. Some are very small. One is a Scene. Up to this age an aeroplane is the only mechanical object that has appeared in Representational Designs in our collection.

(e) Eleven year old children. The outstanding quality that impresses the observer on looking through a collection of designs of eleven year old English children is the conventionality of the Compact Patterns. Most are blocks of pieces fitted together in regular star or rectangular-shaped patterns of the Popular type which show a variegated use of colour and no individual thought whatever.

Intermediate Patterns are common and for the most part follow the same general design as those of the previous year. Two of our Patterns are interesting in that, although their makers came from different backgrounds, both follow a general oval form reminiscent of a piece of jewellery, with a loosely constructed centre. Greater organisation is shown in Intermediate than in Compact Patterns. Certain examples approach adult standard.

New classes: Circular Movement appears in some Patterns (see Plate 84). Space develops within Patterns mainly Intermediate and with either Defined Space or Hollow Centre.

Heavy, balanced, Compact Corner Patterns appear, projecting strongly towards the centre, which is occupied by a small Intermediate item and *Pendant and Growing Patterns*.

Representational Designs. A difference appears here between rural and urban school children. Designs from rural children include two good scenes containing trees and flowers. The only single house is a fantastic 'fortified manor' - too ambitious a subject for the abilities of the child. There are no ordinary human figures, but two peculiar presentations giving a comic effect are labelled 'men' by their makers.

(f) Twelve year old children. By twelve, difficulties in manipulating

The Use of the L.M.T. in the Study of Children

the pieces have disappeared for the great majority of children. The characteristic feature is the very high proportion of successful Compact Patterns placed free in the tray. The standard Popular types continue to form a large proportion of this age group.

New classes: Compact Patterns, Winged and others approximating to this type appear; for the first time some pieces are superimposed; and perspective effects appear (as in Plate 83).

Card-House Patterns: These are Patterns in which horizontal blocks of Pattern are placed compactly one above the other to form a large irregular Pattern (see Plate 85). These too are built of simple pieces used in a direct and obvious way, but with a colour choice which has interest and removes them out of the very simple class.

Awareness of the whole area of the tray appears in a new sense. For example, the whole tray is covered with diamonds packed closely together and arranged in the long direction of the tray, without any attempt to adjust them to the edges; or differently composed blocks of Compact Pattern are arranged symmetrically on the tray. In *Collective Patterns* mixtures of Abstract and Representational items appear.

Colour. A discriminating use of colour often completely disguises the nature of the central core, and gives a certain distinction to the resulting pattern.

Patterns made exclusively with black and white pieces now appear for the first time (see Plate 83).

(g) Thirteen year old children

New classes: Patterns resembling a capital H; Cruciform types of Pattern. These occur fairly frequently: they may either be clear and direct, or combined with Tile arrangements of Pattern so as to give an effect of layering, the cross being either behind or in front. In many the star arrangement of diamonds forms the centre, and the cruciform effect is brought out through the arrangement of colour.

The emotional turmoil of adolescence is reflected in the Cruciform Patterns, and the frequency with which Winged Patterns appear.

Representational Designs. For some reason, probably accidental, our collection contains only a few Representational Designs among the thirteen year olds; all of these are large and show remarkable con-

The Use of the Test

trasts in skill. Faces appear for the first time, and figures in movement.

(h) Fourteen year old children

New classes. At this age differences between the Patterns of the age groups and those of adults disappear.

In some of the successful Compact Patterns made at this age, a tangential arrangement of arms radiating from a central core appears for the first time, of the nature described in Chapter Three.

Representational Designs tend to be very large. They may be either clumsy unsatisfactory renderings of such themes as 'a fortress', or, at the other extreme of skill, excellent and vivid presentations of a running man.

The use of colour has now become sophisticated. Combinations of black and white appear fairly frequently and very occasionally white only is used.

3. STUDIES OF INDIVIDUAL DEVELOPMENT IN THREE CHILDREN

Limitations of space make it very difficult to describe adequately or to illustrate the mode of development of individual children. After careful consideration it has been decided to take three children of contrasted types from the nine to twelve age groups, and show the changes that take place in their designs in roughly six to twelve months intervals. They have been chosen to illustrate the three commonest forms of development.

Example one. Girl aged ten. Design 1 (Plate 86). This is an Abstract Pattern of a very normal type for this age.

It consists of a frame made of rows of half squares alternating in direction and in colour, red and blue following the long line of the tray, green and yellow the short sides. Her immaturity is shown in her failure to observe that one green half square is missing on the right hand side and therefore the top line slopes down to the right. In the oblong space within the frame are four small patterns of identical shape in which the colours are also arranged in pairs diagonally, red and blue around a white centre forming one diagonal, yellow and white around a blue centre the second.

Design 2 (Plate 87) was made four months later. This is also an Ab-

The Use of the L.M.T. in the Study of Children

stract Pattern, but the frame has now disappeared and it has become Concentric in type.

Four patterns are arranged in an oblong with a diagonal symmetry. A fifth pattern has appeared which should have been placed centrally, but once again lack of skill has placed it too far down the tray. Of the four patterns, in one diagonal the same form of pattern appears as in Design 1, but now with only two colours: green surrounding blue. On the other diagonal a new pattern has appeared - that of a fundamental star carried out in red and white. The square which forms the centre of the patterns in Design 1 and of two of the patterns in Design 2 is the shape used for the fifth pattern, which is a cross formed by five squares each divided into two colours.

Design 3 (Plate 88) was made some months later. This is also an Abstract Pattern.

It is a Collective Pattern consisting of five individual patterns, but now the centre pattern is the most important, looking as if a very common process is taking place in which the side patterns gradually disappear giving place to a single Centralised, Symmetrical Pattern.

Of the five patterns, three running in the opposite diagonal to the stars in Design 2 are made up of two Fundamental stars and one Elaborated Fundamental star in the centre. The influence of ideas now appears (these patterns were made in Coronation year) in that the two smaller stars are carried out in red, white and blue. But one diamond is missing in each. In the centre Pattern the fundamental star is in green and white, and the angles of the star are bridged by a ring of red and blue half squares. In the opposite diagonal two small new patterns appear in which the broken square of the centrepiece of Design 2 is held by two embracing yellow diamonds, thus using every colour except black.

The maker is a little girl of very normal intelligence and personality from an English village school, and these three patterns show an absolutely standard type of development in children of this age, illustrating both the persistence of personal Pattern and the development of type of Pattern with increase in age.

Example two. Design 1 (Plate 89). A boy aged nine and three-quarters makes a Collective Abstract Pattern.

This consists of three Patterns in the corners of the tray enclosing a central space; but instead of a similar fourth group he constructs a heavy non-symmetrical band of diamonds projecting obliquely downwards across the tray pointing towards the lower right hand corner. Colour is used indiscriminately.

The Use of the Test

Design 2 (Plate 90). Four months later the idea of an Abstract Pattern has disappeared and its place is taken by a Representational Design.

The band of diamonds has now turned into a curving green path, and the space left vacant in the first Pattern is occupied by a house. The place of one of the earlier groups is occupied by a bird and that of another by a very simple figure of a man. The left lower corner remains empty. This makes a very awkward composition, but the feeling of the block of diamonds in Design 1 has found its meaning in the house-path-man of Design 2, just as in Plate 110 the block of green pieces becomes the body of the house in Plate 17 ('House-on-fire').

Design 3 (Plate 91). Eight months later this boy's interest in Representational Designs has developed into a sense of composition and has freed itself from the dominance of a particular form.

The position of the man in the second design is now reversed and he appears on the left; the black limbs have given place to yellow. In place of the house (a feminine symbol), a sturdy tree (a masculine symbol) has appeared with a fringe of green pieces (grass) along the lower edge of the tray, balanced at the top by two pairs of diamonds in black; and green birds with a third bird perched on the tree.

The interesting points about this development are the very noticeable increase in freedom and decorative quality of the design in the course of a year, between nine and three-quarters and ten and three-quarters. To some extent this is a maturation feature, but it is also probably connected with the development of a sound masculine symbolisation in the third Design.

Example three. Design 1 (Plate 92). The first Design, made by a boy of eleven and a half, illustrates a type which is difficult to classify but is common in children.

It consists of a centre surrounded by two oval lines of pieces. A central *motif* stretches from the upper to the lower rim of the tray and is flanked on either side by two items of strangely contrasting colours of black, white and blue with an indefinite arrangement of pieces either side to connect them with the edge. In the centre is a red star made of scalenes surrounded by a circle to which two green diamonds are vertically attached (the only green in the pattern) making a spindle effect. All the colours are used in a symmetrically balanced manner. One red square has been omitted.

The Use of the L.M.T. in the Study of Children

Design 2 (Plate 93). One month later the Abstract form has given place to a Representational one.

The form of the central arrangement of scalene triangles surrounded by an oval line of diamonds remains, but is now turned into a tree. The single diamond at the foot of the centre pattern of the previous design has become the trunk of the tree. The two black, white and blue vertical patterns in Design 1, one on each side of the centre, have now become figures of two men. The right hand takes over the black and white colouring with the laterally adjacent yellow, and the left hand the vertical colour arrangement of blue and red of Design 1. Each man has a white square for his body. The general shape of blue half square and yellow and blue equilaterals at right and left of the top of Design 1 reappears as black and yellow birds in 2. Even the fault in 1 in which the arrangement of the three top pieces is slightly less successful on the left than on the right is repeated in a less successful bird on the left looking towards the left instead of, as it should, the right. The whole design has increased considerably in force and clarity.

Design 3 (Plate 94). Six months later he returns to the Abstract form. This time the centre star has broken out of the surrounding circle.

The five single red scalenes of Design 1 have now become a star with six arms; four of these are made of solid squares in the colours of the original centre, and two of white diamonds. The squares stretch to the confines of the tray, and between upper and lower arms is a half circle of diamonds, the upper one in red and green and the lower in yellow. The core of the second Design remains as a vertical column of black and white pieces, and the side features as four black and white squares. In this third Design the force which was confined within the circle of the first Design is now driving freely out from the centre along four diagonals. Vestiges of the enclosing circle however remain in the upper and lower crescents. The black and white colouring of Design 1, which appeared in two isolated items, now forms the horizontal centre of Design 3, this line with its six broken squares forming a new oblong element.

These three Designs show that a certain characteristic quality of Design can exist in a series although the outward mode in which it is expressed can change as much as from Plate 92 to 93.

CHAPTER SIX

THE USE OF THE L.M.T. IN THE STUDY OF SUB-NORMAL INTELLIGENCE

Illustrations referred to in this chapter in the order in which they occur:
Plates 72, 134, 133, 132, 75, 132, 95, 96, 97. Figures in the text: 10, 11, 12, 15.

1. INTRODUCTION

The limitations of a book of this scope make it inevitable that factors which in actual life occur together and by their mutual presence continually modify one another, should be described separately. For example, the process of development in children and the study of neurosis are considered in separate chapters, whereas in real life both factors may be operating simultaneously.

In the case of children, of normal adults, or of patients suffering from such conditions as definite psychosis, we know enough of the processes at work to make it possible to distinguish to a large extent the different factors and to take account of their inter-relations. In applying the test therefore we can, in these cases, deal with the subject as an individual unless, as in the use of the L.M.T. in industry, we are specifically considering an individual in relation to his work. But in using the test for the study of persons in Institutions for Mental Defectives, this no longer holds good. Here the understanding of the responses to the test is complicated by the number of factors that have to be taken into consideration.

Four of these factors relate to the individual as such. These are (a) inherent intelligence as assessed by the customary testing procedures; (b) the stage in maturation reached by the individual, particularly in that aspect which relates to the use of the body and practice in carrying out manipulative tasks; (c) the possible presence of neurosis; (d) the possible presence of psychosis.

In the study of individuals of sub-normal intelligence these factors

The Use of the L.M.T. in the Study of Sub-Normal Intelligence

are complicated by the social implications that have tended to separate such individuals from sharing the common experience of their fellows. It is thus necessary to consider the relation of these individuals to society, both from the point of view of the attitude of society to them and in regard to the effect that this attitude has on the individual concerned and on his attitude to society. For example, the fact of being unable to grasp what seems simple to other children can give rise to emotional reactions which may come to dominate the picture presented by the individual.

It is often possible to sort these factors out if the subject is brought for assessment before being included in an Institute for sub-normal individuals. But if the L.M.T. is being used to study groups of individuals who are already in an Institution, all the factors will have become so mutually interactive that considerable difficulty may be experienced in sorting them out.

The study of individuals of sub-normal intelligence is as yet in its infancy. No paper on this subject has been published in Europe and T. L. McCulloch's paper *Use of the Löwenfeld Mosaic Test with Mental Defectives*, is of the nature of a report on work in progress. But a certain amount of knowledge has been gathered concerning the reaction of defective individuals to the L.M.T. which can provide a basis for further work, and with this the present chapter is concerned.

2. THE L.M.T. AND THE FACTOR OF INTELLIGENCE

Since by definition subjects of sub-normal intelligence suffer from varying degrees of difficulty in the apprehension and understanding of the outside world, modifications of the technique of administration of the test are essential with individuals of sub-normal intelligence, and the procedure devised by Dr McCulloch to meet the situation is recommended.

In the administration finally adopted, the subject is shown and allowed to handle each shape according to a definite routine. Several pieces are left in loose array in the lid of the test box, the other pieces being stacked in their compartments in the box. The subject is instructed to make something which pleases him. No subsequent cues are provided and no great emphasis is placed upon the pleasing characteristics of the design. No time limit is used. The detailed instructions are as follows: (cover one section of box of mosa-

The Use of the Test

ics before showing to subject): "See all these pieces with different shapes and colours. Notice this shape with all these colours" (point to scalene triangles). "Here is a white one, and a black one." (Pick up and hand a white and a black scalene triangle to subject). "Just look at them, and see how they feel. And here is a yellow one," (hand yellow scalene to subject), "and a blue one," (hand to subject), "and a green one," (hand to subject), "and a red one." (Hand to subject). "Those are all the different colours." (Pause 10"). "All right, drop them in the lid. Now, — I will show you the shapes. Here is this one again." (Hand white scalene triangle used in colour demonstration). "All these" (point to section of scalenes), "are like this one. And, some are like this," (hand white square, pointing to section of squares). "And some like this" (hand white right angle triangle, pointing to section of right angle triangles). "And, some like this" (hand white diamond, pointing to section of diamonds). "And, some like this" (hand white equilateral triangle, pointing to section of equilateral triangles). (Pause 10"). "Those are all the different shapes. And, each shape has all these colours" (point to scalene triangles lying loose in the lid). "Just drop them in the lid. Now, — I want you to make something with these pieces" (point) "on this tray. Use as many pieces as you wish. Here is another set" (uncover second set) "with a lot of pieces. It is just like this set" (point to first set). "Understand? Make something that pleases you. Let me know when you are finished."

Since the mode of estimating intelligence in most general use is based upon the normal development of children, the first fact to be considered is whether any relationship can be traced between the mental age of sub-normal individuals and the developmental pattern of the L.M.T. as set out in the preceding chapter.

Only with very large numbers of Designs could any attempt be made to formulate an authoritative statement on this point. Moreover, in view of the tentative facts set out in Chapter Ten, for the statement to be valid such Designs would need to be compared with equal numbers of Designs from normal children of chronological ages corresponding to the mental ages of the defectives *from the same culture*. Neither of these sources of information being at present available, all that follows must be regarded as very tentative conclusions drawn from analysis of a somewhat miscellaneous collection of British material. This material compares in an interesting way with that already gathered in respect of schizophrenic patients and young children, and from the analysis of it certain suggestive facts emerge.

If a random collection of designs from inmates of a Mental Deficiency Institution is examined, the first point that strikes an investigator is the relatively large number, as compared with similar mater-

The Use of the L.M.T. in the Study of Sub-Normal Intelligence

ial from normal subjects, of Representational Designs. At the time when most of the Designs upon which these deductions are based were collected, the phenomenon now called the Kite Reaction had not yet been isolated, nor had the importance of the exact details of administration been realised. It is therefore impossible to tell how many of them were true Representational Designs in the sense defined in Chapter Two, how many resulted from a Story Reaction, and how many were Kite Reactions. Since, as will be seen later when Representational Designs made by sub-normal individuals come to be discussed, the ideational content often entirely masks the manipulative aspect, little that is useful can be deduced from these Designs in regard to the factor of intelligence. Representational Designs are therefore considered separately.

3. ABSTRACT PATTERNS: FORM

When any collection of Abstract Patterns made by subjects of sub-normal intelligence are sorted by their structure into the groups and sub-groups outlined in Chapter Five as appearing in normal children at different chronological ages, and these groups are then arranged in degrees of ascending competence, a rough correspondence appears between the mental ages represented by the Designs of sub-normal individuals, both absolutely and in relation to each other, and the chronological ages of the children. Unfortunately, limitation of illustrations makes it impossible to present a series of these to compare with those from Chapter Five, and a rough description is all that can be given to illustrate the sort of correspondence that is suggested. For this purpose a series of Patterns has been selected, not to prove, but only to illustrate, the type of phenomena that are met with. Once again, it would go far beyond the support of the material that is available, even to attempt to trace out in detail for sub-normal individuals the classifications suggested in Chapter Five for normals; therefore a far simpler grouping is adopted, since the intention is to present a slender line of material for discussion, rather than to bring to bear any heavy artillery of proof.

GROUP ONE Scattered pieces, loose groups and wavering lines. All these three types occur.

The Use of the Test

Example one P.G., girl, good middle class home, aged seven and a half, thirty-nine pieces in all six colours.

Nine squares, twenty-six equilateral triangles, three half squares, one scalene are scattered over the whole area of the tray with an elusive element of colour grouping; six equilateral triangles are arranged in pairs, four squares nearly regularly grouped, and three equilateral triangles are placed vertically, the base line of one touching the apex of the next. I.Q. approximately 57. This would compare with Figure 10 and Plate 72.

Example two Girl from Institution, aged twelve. Nine pieces in all six colours.

Six diamonds, one square, one half square, one scalene arranged in a loose group near the left hand edge of the tray. I.Q. 48. This would compare with Plate 134 and Figure 11.

Example three Boy aged ten and a half from Institution. Eighteen pieces in all colours but blue.

Fifteen diamonds, two squares, one equilateral triangle are arranged in a curving line across the middle of the tray along the right edge and back along the top edge in a straight oblique line from the top left corner to the end of the first line, making a vague quadrilateral figure. This is similar to Plate 133 in that the pieces are placed end to end and are detached from each other, but it also resembles Plate 132 in that the colours are more purposefully chosen and the oblique line has a certain definite alternation of pieces. This difference from Stage 5 in Section 2 (ii), Chapter Five of normal children brings in the element of maturation. *Example three* resembles that of a young child with some two years of maturation of experience added. I.Q. 52.

GROUP TWO Pairs and edge groupings. So far as our very limited experience goes, we have not an example of pairs of pieces standing as in Plate 75 or Plate 132, and groupings along the edge are singularly absent. Pairs of pieces occur, in some examples, mixed with other simple groupings.

Example Boy aged eight, with stunted physical development and retarded in speech. Thirteen groups and one single piece in all colours but black.

Fifteen squares, twelve equilateral triangles, four diamonds, six half squares are used. This boy started by taking out the four blue squares and putting

The Use of the L.M.T. in the Study of Sub-Normal Intelligence

them in a row projecting from the short side of the tray. Above this he put a similar row of red, and above that, one of white. He took four red equilateral triangles and made a row of them; then arranged a loose group of equilateral triangles, and followed this with eight pairs of different pieces, placing the pairs of diamonds side by side, not fitting together, and added two single pieces. I.Q. 62.

There is a quality about these responses which is different from that usually met with either in children or schizophrenics, but which is difficult to describe. In some cases there is an element of arrangement about the placing of the pairs on the tray which shows that in the sub-normal child the idea of the space of the tray shares interest with that of the pieces, whereas in the normal child who makes this type of response this perception of space has not yet developed.

We have no evidence to show whether Pre-fundamental Patterns occur alone, as in Figure 12, though they have been found among other simple groups in Collective Patterns. This is in line with all the evidence so far available, from which it appears that this element of maturation in defective individuals who make Patterns of the same type as very young children, is a persistent one.

GROUP THREE Fundamental Patterns. These are a regular element in Patterns of individuals of sub-normal intelligence; but an interesting point is that, as far as our material goes, it appears that when a Design consists of Fundamental Patterns only, these are arranged in a patterned way on the tray and are made by individuals with a considerably higher I.Q. than we have so far considered. Plate 95 illustrates this and also a point, which is commented on later, concerning the use of colour in Patterns by individuals of sub-normal intelligence. We have no example of the Star Fundamental and this corresponds with U.S.A. experience* in the use of the L.M.T. with children, that the Star Fundamental appears later than the Hexagon Fundamental.

GROUP FOUR Collective Patterns. In Chapter Five it was explained that in the development of the Patterns of normal children there is apparently a stage of Collective Patterns in which the individual Pat-

* Dr Bates Ames' personal communication

The Use of the Test

terns are representative of different developmental stages that appear between Fundamental Patterns and Elaborated Fundamentals. The same seems to be true of defective individuals.

Example Girl in Institution aged 15.

Eight groups of pieces using all colours and all shapes are arranged roughly in three lines, containing two pairs, one attempt at a star but with one diamond missing from it, two unsuccessful and two successful very simple original Patterns. I.Q. 41.

In this group of Patterns there is an unexpected alternation of ability and I.Q. in both directions, so that now and again individuals with I.Q.'s under 50 produce Patterns falling into this group among which are items which seem to demand a greater capacity to understand and manipulate forms than their I.Q. makes probable. On the other hand some individuals with I.Q.'s 25 points higher, produce Collective Patterns containing Fundamental Patterns only.

GROUP FIVE Elaborated Fundamentals. These have only been found among responses of subjects of a much higher grade, (*Example* – an epileptic girl of fifteen with an I.Q. of 84), and then only in combination with other types of Pattern in a Collective Pattern.

GROUP SIX Slabs. Because of the tendency in many subjects to affix titles to blocks of pieces, the position concerning Slabs is ambiguous. Considered from the point of view of the shape of the blocks of pieces, Slabs do certainly occur; but usually after completion a name is given to them (see under), and therefore they are classified as Representational.

GROUP SEVEN Single Patterns. It is in connection with the earlier forms of these that the factor of neurosis begins to appear, as when Single Patterns are made by individuals with I.Q. under 75 and are not given a name; they are usually very simple and often successful. Compact Patterns occur far more frequently than Intermediate, but the Intermediate when they do occur are either very unsuccessful or of a higher grade than the Compact ones. In our collection, with one exception, it is the simpler pieces only that are used and these in simple combinations.

The Use of the L.M.T. in the Study of Sub-Normal Intelligence

GROUP EIGHT Patterns covering the tray or making use of the whole area of the tray. These are rare; they occur only in the higher ranges of inherent intelligence, and are usually unsuccessful. We have not so far seen an example of a straightforward Frame and Item or an empty Frame among the Patterns of sub-normal individuals.

GROUP NINE Well-integrated Popular Patterns. These occur now and then among the higher ranges of intelligence, but as such individuals would not be found in Institutions were there not accompanying serious factors which have militated against social adjustment, a great deal more than the question of intelligence is involved in assessment of these Patterns.

4. ABSTRACT PATTERNS: COLOUR

For the most part subjects in the lower ranges of inherent intelligence use all the six available colours, often in the order in which they are arranged in the box. If a colour is omitted it is usually black or white, or if not black then blue (which in artificial light tends to look black). We have seen no example of a Pattern in one colour. On the other hand we have at least one Collective Pattern, made by a girl of sixteen and a half, I.Q. 86, where two strips of regular pattern and two hexagon Fundamentals are each made in pairs of colours arranged alternately. One surprising Design made by a girl of nineteen, I.Q. 59, consists of a white and a yellow hexagon Fundamental; to the corners of the yellow hexagon six blue diamonds have been attached, like the spokes of a wheel, giving a most pleasing effect.

Three colours are commonly found, used in a balanced symmetrical manner and adding point to the Pattern. When more than three colours are used the disposition becomes indiscriminate. When a group of Fundamental Patterns is made, arranged in a formal manner on the tray, it is commonly found that most are made in single colours; but the arrangement, both of pieces and of colours, as in the hexagon in Plate 95, commonly displays an ingenuity and originality which would not appear in an individual of normal intelligence in relation to a single Fundamental Pattern.

What is interesting about all Patterns so far collected by us from sub-normal individuals is the absence of Patterns related to the edge

The Use of the Test

of the tray. This eliminates Corner, Edge, Frame and Pendant Patterns; of those which remain: i.e., Winged, Cruciform and Growing, only Winged Patterns have so far been met with. Plate 96 illustrates the very difficult problems that such Patterns can give rise to. This Pattern was made by a girl of fifteen and three-quarters, I.Q. 49, an inmate of an Institution for Defectives. Unfortunately its unusual quality was not appreciated at the time of collection, and insufficient details concerning the subject are available to make possible a guess at the basis for the unusual manipulative and creative ability shown in this Pattern.

5. REPRESENTATIONAL DESIGNS

When we come to Representational Designs the picture is quite different. We have no example of a genuinely successful Representational Design from an individual of sub-normal intelligence, though in certain Designs, when what was intended is known, it can be recognised. Representational Designs rarely occur singly. The commonest form is either in pairs or as items in Collective Patterns, usually arranged in rows. The naming seems generally to be of the nature of Kite Reactions and often prefaced with the words 'looks like'. Occasionally a good Pattern will appear and then a quite unsuitable name be given to it. Sometimes, as in Plate 97, when the left hand muddle of pieces was called 'A wee sweetie shop', the result resembles the schizophrenic cat (see Figure 15) in being completely unrecognisable.

It would appear that for this class of subject, concentration upon the form of the pieces can bring about a sufficient understanding of them to enable completion of a simple successful Abstract Pattern, but the matching of pieces or combinations of pieces against an outline or a mass held in the mind's eye, is beyond the subject's capacity. On the other hand, now and then something like a rudimentary Fox Reaction appears, as in one Design made by a woman of thirty-five with an I.Q. of 31 in which two pointed masses, one of five red and the other of four blue pieces were said to be 'flames'.

~~So far we~~ have been considering single responses to the test. We are very much handicapped by the absence of details in our collection concerning the attitude of the subjects to the test, to their performances, and to their finished Designs. When it comes to series of res-

The Use of the L.M.T. in the Study of Sub-Normal Intelligence

ponses from the same subject, the same types of phenomena appear as with normal individuals – that is to say, if the general attitudes and experiences of the individuals remain relatively constant, then the general structure of the response persists unchanged. If, on the other hand, changes are taking place in the subject, either those of deterioration or of improvement, these will be reflected in the Designs made by the subject and in the general structure of responses.

6. PROBLEMS

(i) The factor of maturation

As has been pointed out in several previous chapters, there is a great deal more to an L.M.T. response than the finished Design. In a basic text-book it is difficult to give any comprehensive idea of the amount of information that can be gathered from close observation of the whole of a subject's response concerning the level of his intelligence and his reactions to difficulties arising out of a deviation from the normal. As pointed out on page 121, Chapter Five, the nature of the material is such that certain combinations of pieces arise almost automatically, and a final Design can at times emerge from more or less chance juxtapositions of pieces which, regarded as a finished construction, would give the impression of a far higher level of competence in the subject than is in fact present. Our own work and that of Dr McCulloch appears to support a certain correspondence between Mosaic Design and the mental age of the maker. If this is taken as established the next step in the use of the L.M.T. to study the problems of sub-normal intelligence is the comparison of total responses from subjects of the same mental age and their arrangement in ascending degree of competence. In the analysis of such a series it should be possible to ascertain whether these subjects show the same (or possibly other) lines of development which have been outlined in Chapter Five as occurring in the development of normal children, or whether no such separation into parallel lines of development can be traced.

• In pursuing such a study, it would be desirable to have several responses from each individual since, up to date, no study exists of repeated Designs from the same individual subjects of sub-normal intelligence and therefore no evidence is available as to constancy of

The Use of the Test

performance. It is possible that the factor of practice would play a larger part in this type of subject than with individuals of normal intelligence.

From the pilot studies so far carried out it appears possible that the factor of maturation affects the character of responses made by individuals of lower mental but higher chronological ages, and it would be interesting to compare the Designs of older and younger subjects of the same mental age. Owing to limitations both of space and of the work so far carried out, in the illustrations given in this chapter the I.Q. of the subjects has been quoted rather than the mental age, since insufficient evidence is as yet available to show whether the fact of higher chronological age would or would not constantly affect the nature of the Design.

(ii) The problem of neurosis

As has been pointed out at the beginning of this chapter, in considering the significance of responses from individuals in Mental Deficiency Institutions the question of superadded neurosis has always to be considered. The problem however of differential diagnosis between a severe degree of neurosis, a low level of inherent intelligence, and severe schizophrenia, is one of extreme difficulty, since in all three cases subjects are apt to make small Slab Patterns or to put a few pieces together to form a very small Pattern which is then placed eccentrically in the tray.

(iii) The problem of differential diagnosis

The great difficulty already referred to of the differential diagnosis in certain cases between mental deficiency and schizophrenia is well known; but the observations of Spietz, Bowlby and others, as to retardation that can appear in children apparently normal at birth, after certain traumata, suggests that the same difficulty may attend diagnosis of children whose response to the L.M.T. is that of the mental defective, although the cause may not be poor inherent intelligence.

Here the *mode* of production of the Design can be of crucial importance, since the behaviour, in regard to manipulation of the pieces, of the child who is prevented by the operation of neurotic factors from using the intelligence that he has, differs considerably from that of the child who is satisfied with a very small and/or Incoherent Pat-

The Use of the L.M.T. in the Study of Sub-Normal Intelligence

tern because it represents the maximum that he is able to do. It is of course easily possible for both factors to be simultaneously present. Comparison between Rorschach results and the L.M.T. in these situations could be expected to throw fresh light upon them. This would be particularly valuable in the U.S.A. because of the presence, in collections of children's Designs made in the U.S.A., of a certain number of very small Patterns (sometimes consisting of two pieces only) made by children said to be of normal intelligence. Until a good deal of comparative work has been done with several tests and with individuals of different types and from different cultures, we have no knowledge of what are the determining factors in the production of these two varieties of Pattern nor of how those made by one type of individual can be distinguished from those made by the other.

(iv) The problem of excellent Designs

A fourth problem occurs at the other end of the scale of Patterns and is exemplified in Plate 96. Now and again among mental defectives, Patterns will appear that display a complexity far beyond the accepted range of possibility for the mental age and intelligence of the individual. This phenomenon is paralleled by the unexpected coherence, originality and effectiveness of certain paintings done by defective individuals in Britain. It almost seems as if some quality exists in certain of these individuals for the perception, presentation and manipulation of form which is tangential to and not included in the function of personality termed intelligence. These excellent Designs, made by individuals of low grade intelligence, form as fascinating a problem as do the poor and ineffective, apparently neurotic Designs, made now and again by high grade defectives. It is possible that a set of serial Designs from such subjects might hold clues to their understanding.

(v) The problem of anti-social individuals

- The fifth problem in the study of individuals in Mental Deficiency Institutions concerns the anti-social individuals who inevitably form part of the population. Nothing is known about the Designs that such subjects would make, since no separate enquiry into the responses to the test of this type of subject has yet been undertaken. The same holds true for epilepsy and post-encephalitic states. The delicacy of

The Use of the Test

the test in certain other connections suggests that common factors might well appear in the responses of individuals suffering from these two conditions that might overlay the reactions which originate from and are associated with a sub-normal Intelligence Quotient.

CHAPTER SEVEN

THE USE OF THE L.M.T. IN THE STUDY OF NORMAL PERSONALITY

Illustrations referred to in this chapter in the order in which they occur:

Plates 124, 97, 136, 101, 102, 7, 114, 22, 26, 27, 11, 23, 84, 25, 29, 98, 38, 103, 24, 43, 28, 30, 46, 47, 48, 83, 99, 40, 100, 12, 129, 18, 19, 20, 128, 16, 6, 104, 105, 106.

Figures in text: 9, 3, 4, 14.

1. GENERAL CONSIDERATIONS

We are now in a position to consider the use of the L.M.T. in the study of normal personality. This at once raises the question of the meaning to be given to the word normal. What constitutes a normal personality? What are to be our criteria in assessing normality? The great handicap from which all psychological research suffers, and in which it differs so much from physiology, is that there exists no standard of psychological normality, and the transition from the neurotic to the normal is by an infinite gradation of shades. The central problem of all Projective testing, therefore, is that of the criteria to be adopted for assessment of the results of the test. In regard to the L.M.T. the word normal can be used in two ways: to describe the Designs, whatever their nature, made by individuals who outwardly appear normal; or to describe Designs in which the characteristics that have been found to be associated with neurosis or psychosis in the maker are not present.

In relation to the manipulative aspects of Designs, the L.M.T. has qualities peculiar to itself, for the inter-related properties of the pieces give rise to arrangements which, in regard to their manipulative aspects alone, are normal in the sense that such Patterns are not successfully constructed by psychotic, severely neurotic or defective individuals. A successful Symmetrical Pattern or a successful Representational Design of a certain complexity is therefore a normal Pat-

The Use of the Test

tern in as far as the ability to create such a Pattern is a proof that there is no organic or inherent intellectual lesion or defect. This however takes us only a very little way. The range of possible responses to the test, both within one culture and cross-culturally, and the limits of our present knowledge of the test, make it impossible to say of any Design, taken by itself, that it is normal; although, we can say that certain others are not.

Nevertheless owing to the fixed nature of the material, Designs can be made successfully only by individuals who possess certain perceptual and imaginal abilities. Designs therefore which can be labelled defective are of two kinds: Patterns such as Plate 124 in which it is clear that the subject is unable to complete the geometrical structure she has set out to make; and Designs such as Plate 97 or Plate 136 in which it is equally clear that the arrangement of pieces in the tray suggests to the maker a shape and meaning that it does not present in actuality.

It must however be borne in mind that to some extent these same effects can be produced by the immaturity of childhood, and that normal in this sense is relative to age.

In this structural sense therefore there is such a thing as a normal mosaic: that is, a Design so constructed that all its pieces have been clearly perceived and combined, and the meaning given to the Design is immediately apparent to the tester. Dr Ellenberger shows in Chapter Nine that within this limited sense the concept of a normal Design has diagnostic significance.

When we come to more complicated structures, however, the matter becomes more difficult. As we shall see in Chapter Ten, when we leave the range of defective constructions the term begins to take on a cultural connotation. It becomes evident that what is normal for one culture, in that it is a typical response for intelligent well adjusted individuals within that culture, may well not be normal for another, since factors considered in Chapter Ten may well come into play.

On the other hand, as explained in Chapter Ten, certain types of Design have been found, by all who have used the L.M.T. in whatever culture they have worked, to be associated with the presence of disturbance in the maker. For convenience sake these are usually referred to as neurotic Designs. In the same way, and purely for convenience in discussing Designs, clear well constructed representations

The use of the L.M.T. in the Study of Normal Personality

of external objects, or well balanced and competently executed successful Abstract Patterns falling into the groups of Stable Patterns described in Chapter Three, can be taken during the provisional sorting of a collection of Designs, before detailed analysis is undertaken, as normal for European subjects. The question of the types of Pattern that would correspond to this provisional classification for subjects of other cultures must await further work.

But a response to the test does not merely involve the ability to manipulate the individual pieces successfully: the form of the resulting Design also represents a kind of self-portrait.

In interpreting responses to the test there are six aspects to be considered: (a) the manipulation of the material; (b) the relation between the pieces used and the space of the tray; (c) the form of the resulting Design; (d) the handling of colour; (e) the content; (f) the comments of the subject and his attitude to the test and to what he has made.

These six aspects can again be analysed according to: (1) the intrinsic structure of the Design as constructed by the subject; (2) the relation of the subject to his Design when completed; (3) the comparative study of collections of Designs made by subjects showing similar major personal characteristics such as age, sex, culture, social background, level of social adaptation; (4) comparative study of Designs *qua* Designs (as carried out in Chapters Two to Five).

It is to be expected therefore that if the claim that the response to the L.M.T. is always to some extent a self-portrait is to be substantiated, there will not be any inevitable correspondence between normality of Design and normality of outward behaviour, since it is possible for adequate functioning of personality to be achieved with apparent outward success but at great inner cost. So while it is unlikely that a Design indicating normality (in the sense in which we have defined this term) from the point of view of the Design itself, will be made by an individual showing obvious outward signs of disturbance, yet the reverse is by no means true. It is possible for features that have been shown to occur characteristically in neurotics, to appear in the Design of an individual who is achieving an outward appearance of normality. This is the value of the L.M.T. in counselling and vocational guidance, since evidence of strain may easily appear in the Design of a subject whose adjustment to his immediate circumstances

The Use of the Test

may be outwardly successful but who would, on the evidence of the Pattern, be unlikely to be able to maintain this adjustment under conditions that would be productive to him of greater stress, or to continue indefinitely his present apparently good adaptation.

Mosaic Designs can therefore indicate a stable as contrasted with an unstable personality, and in the latter case can give information to the tester about the general nature of the instability. They can also show where a compromise has been achieved between inherently conflicting elements of personality (see Plate 101) as against a case in which such integration has not been achieved (see Plate 102).

For the purpose of this book therefore a *normal individual* will be defined as one who is able to function successfully and without severe interior stress within the ordinary categories of social life current in the society from which he comes. As has been explained above this definition is of less importance in regard to the L.M.T. than with other tests; for once the criteria of neurosis and psychosis as shown in responses to the test are understood, and experience has been gained in their application, these criteria can be applied by the tester to the analysis of Designs and can be independently assessed.

The objective therefore of this chapter is to set out in broad lines the manner in which the mosaic responses of normal people, using this term within the definition of the term given above, are analysed, and to give a progressive series of examples of the analysis and interpretation of such Designs.

It is often said by workers who begin to use the L.M.T. that the process of acquiring experience in its use resembles that of acquiring a new language. There is truth in this remark. Carrying out a response to the L.M.T. is, in a sense, the use of certain flexible instruments to express something of importance to the creator; and while each individual expression has qualities that make it unique within a certain range, yet there is a grammar which is used by all; and to understand what is expressed, this grammar must be learned and must indeed become second nature in the tester. When this has come about a mosaic can be read almost as immediately as any other statement in comparable media, and, to the definite knowledge of the tester gained through the analysis of the total response, intuition can add overtones of knowledge that it is difficult to express in words, much as overtones of this nature appear in any good interview.

2. ANALYSIS OF THE ATTITUDE OF THE SUBJECT

An interpretation of a response from a normal individual falls into certain obvious stages, of which the first is the study of the attitude of the subject to the task and to his performance with the materials, and the second the detailed examination of the Design produced.

We will start with the study of the relation between the subject and the task.

(i) Attitude to the test material

The L.M.T. is basically a miniature reality situation. If the rapport between subject and tester is satisfactory, the reaction of the subject to the task presented to him in the test can be taken to mirror his probable spontaneous reactions to demands made upon him in actual life for action in unfamiliar situations. A report on an L.M.T. response is therefore an objective record of the subject's response to an experimental situation.

This situation is partly structured and partly unstructured. It is unstructured in the sense that the subject is confronted by a box of pieces and an empty tray, and is given no question to answer and no defined task to fulfil. He is asked to do something, but the something is not specified. He can refuse altogether, or he can place one piece upon the tray and say he has finished, thus making a negative response; but what he does is determined entirely by his own will. He is not a given dot or line to incorporate, as in the Hoin-Hellersberg test; or a given blot to react to, as in the Rorschach test; or a command to obey, as in the T.A.T. or Draw-a-Person test. If he is unfamiliar with geometric shapes he may, as already explained, have no pre-existing idea of the kind of Patterns that can be, and are commonly, made with these shapes, and may be wholly unfamiliar with Pattern making; or he may have extensive experience of tile designs and geometrical patterns and be himself an artist. But whatever his previous experience, evidence regarding it will come out in his discussion of his Design with the observer after the response is completed. At the moment of making his response there is nothing in the instructions or in the tools of the test themselves to guide him, and whatever response he makes must come from himself alone. On the other hand the test is structured in that the pieces composing the

The Use of the Test

material are of definite shapes possessing limited and definite geometrical relations to each other which to that extent determine the possibilities of response. The completed Design is therefore a spontaneous creation made in response to the individual's conception of the task set him, and at the same time is carried out within the limits imposed by the material. Thus the first step in analysis of the result is to ascertain what conception of his task the instructions have conveyed to the maker, and what information his handling of the material gives us as to his feelings about this task.

Observation of a number of subjects from different backgrounds has shown that there are certain recurring modes in which they set about the task presented to them. The commonest of these are:

(a) The administrative approach. In this response, the subject starts with a detailed examination of the pieces themselves, sometimes taking all the pieces out of the box and arranging them before him in blocks on the table. No attempt is made to use the pieces until a grasp has been obtained of the range of material available.

(b) The intuitive approach. In this response the subject takes one piece after another out of the box, apparently at random and without interest in the total range of material available, and placing these upon the tray uses them as the starting point of the Design, building it up piece by piece by selection directly from the box of pieces.

In this mode of manipulation it is not so much that the pieces suggest to the subject what Design to make (since several pieces may be taken out in turn and rejected before the starting point selection is made), but rather that the decision arises from an interior process and not from a cognitive survey of all the possibilities offered. Subjects of this type, having once found an item or an arrangement which arouses their interest, prefer to move from piece to piece, concentrating upon the actual effect produced, without showing interest in the presence or possibilities of any other pieces than those being actually used. It is not uncommon in Designs of this sort for one or two shapes only to be chosen and quite elaborate combinations made of these.

(c) The impulsive approach. To some subjects the stimulus of the pieces produces a very rapid reaction so that the whole of their Design is completed within a very few minutes and in what appears to be almost a single movement.

(d) The deliberative approach. The subject may make or begin to

The use of the L.M.T. in the Study of Normal Personality

make several Designs which he destroys before he discovers what he wants to do, his final Design being as a rule carried out with great deliberation.

(e) The experimental approach. Many subjects combine elements from both methods in what may be termed the experimental approach. This is very commonly seen in children who, having realised that pieces when put together form new shapes, will concentrate their attention exclusively upon further experiments of this kind. Ingenious Patterns often arise in this manner.

In these three modes of attack upon the problem, what has caught the interest of the subject are the pieces themselves, their shapes and colours, while the presence or shape of the tray has aroused no particular interest. But there is a large group of normal people to whom the space of the tray appears as the most significant element of the test material, and the pieces as tools to be used in giving appropriate significance to the available space. This may be called :

(f) The spatial approach. In this reaction to the materials of the test the spatial relations between pieces and the area of the tray become more important than the structure of the pieces themselves. This point is discussed further in Chapter Ten.

(ii) Attitude to his Design

When observation and record have been made of the manner in which the individual being tested has grappled with his task, his detailed response to each of the elements of the test and to the finished Design should be briefly discussed with him. The aim of the discussion should be to establish the following points :

(a) How far is the subject interested in what he has produced? It is necessary for the tester to make some assessment of this factor in order to be able to judge the validity of the Design as indicating essential qualities in the maker. There is a very wide range of variety among normal people in this respect; and indifference to the Design, once accomplished, need not reflect any significant disturbance in the subject, though it does so in a certain class of neurotic and psychotic subject. It may very well represent no more than a mood, an unsatisfactory relationship between subject and investigator, or merely the choice of an unfortunate moment for the test. It is wise, however, to refrain from any but quite general deductions from a Design made by

The Use of the Test

an individual who is patently uninterested in the test itself or in what he has made.

So great is the variation in this respect that, while some subjects put down a few pieces on the tray in order to oblige – to meet, in some way, a demand in which they are uninterested – other subjects become so absorbed in the test that the result becomes for them a deeply significant creative event. It is essential, if the deductions from the test result are to relate to real qualities in the subject, that the general significance of the Design to the individual who has made it should be correctly estimated.

(b) What is his opinion of his response? A good deal of valuable information in regard to the subject's attitude to himself can be deduced from his attitude to what he has made.

This can vary from a hesitant and shy remark that he would have done much better had he had more time, had he not been watched, had he been able to experiment first and so on, to an obvious delight and pride in his own production. From the general demeanour of a subject as much as from what he says it can be gathered whether he feels that he has, in his Design, produced something that will deliberately mislead the tester (as in the case of the maker of Plate 7), whether he is a little surprised at the successful effect produced (as with the maker of Plate 114), or if he feels moderately satisfied and content (as with the maker of Plate 22) or amused at the intricacy of the pattern that has emerged (as with Plates 26 and 27).

3. GENERAL STUDY OF DESIGNS

(i) Assessment of the physical qualities of the Design

We come now to the second main branch of study of a normal response: the analysis of the Design itself. In order that this may be carried out at leisure, when completed the Design should be recorded and coloured.

If the argument of the previous chapters has been followed it will become immediately evident that three general qualities must be present in every Design: a visual quality; a manipulative quality; the possibility of a representational or conceptual content. To the average subject these are three aspects of what is to him a whole and it is unlikely that he will spontaneously comment on them separately. The

The use of the L.M.T. in the Study of Normal Personality

discussion should include an attempt to elicit definite information about these different aspects.

(a) Visual qualities. It very often happens that the general impression made upon the maker by the strictly visual qualities of colour, general shape, and disposition of pieces on the tray as they appear in the Design, differs considerably from that made upon the tester.

Take for instance a Pattern showing a particularly unpleasing use of colour. The significance of the Design will be different according to whether the subject comments favourably upon the combination of colours he has made, or whether he says 'It didn't occur to me to think about the colours. I just took whichever came'. In his talk with the subject therefore the tester should attempt to ascertain how the finished Design, considered from a visual aspect, appears to the maker. Does it please him? If so, in which characteristics? Does he find it visually unsatisfactory? If so in what way? Would he have liked it to be different? Does he find the colours that were provided unpleasing or too limited? Would he have liked other colours in place of these? Or in addition to these? And if so of what kind?

(b) Perceptual and manipulative qualities. A good deal of information will have been gained by the investigator as to the manipulative abilities of the subject through observation of the actual process of making the Design; but these observations should be supplemented, after the Design is completed, by enquiry as to the subject's own assessment of his success. Many normal subjects state that they would have liked, for instance, to produce a more complicated Design than the one actually achieved, but have been defeated by inability to grasp the possibilities of the pieces sufficiently to achieve their desire. Other subjects, particularly in the U.S.A., are quite uninterested in the manipulative aspects of the test material and state this freely.

(c) Unsuccessful Patterns. It is at this point that the question of Unsuccessful Patterns arises. It is unlikely that, in the Pattern of a normal subject, elements of gross failure in manipulation of the pieces will occur, but minor errors occur in certain types of normal subjects. These appear usually in the manipulation of the scalene triangles or in the use of half-squares. They can be :

Accidental. In this case the errors will be perceived spontaneously by the subject during the preliminary stages of discussion of the completed Design, and rectified.

The Use of the Test

Involuntary. That is to say, they will be seen by the tester, and realised by the subject *when pointed out to him*, but will not be seen spontaneously by the latter though he is able to correct it.

Essential. In such cases the error is not spontaneously realised by the maker, and though he sees it when it is pointed out he is unable to correct it. That is to say he has created a Design that contains errors in perception and manipulation which reflect essential qualities in the subject. This will be further discussed in Chapter Eight.

(d) **The Design considered as a whole; general considerations.** Before a detailed analysis is undertaken, the tester should note the general impression made on him by the Design. Until considerable experience of the test has been gained, it is wise to write this down for comparison with the results of the full analysis. Owing to the complexity of the material, a reliable interpretation of a Design can be arrived at only by detailed analysis of the different aspects taken together; but the formulation of the initial impression is an important element in the final assessment which can easily be lost sight of in the course of the analysis if it is not independently recorded.

The value of this point was brought forcibly home to the writer in her first contact with Designs collected in the U.S.A. As will be illustrated in Chapter Ten, in certain aspects of the test the cultural element is so strong that the impression made upon investigators coming from one culture, when confronted with Designs from another, can be quite different from that made upon investigators belonging to the same culture as the makers of the Designs, because the criteria used implicitly by each are differently based.

The initial assessment is therefore of importance both to fix the unconscious attitude of the tester and for later comparison. It should be made freely and in colloquial terms, registering as closely as possible the individual tester's feeling about the Design. In this way the tester becomes gradually trained in perception of the structure and appreciation of the qualities of Designs, and the first and the final assessment will be found to approximate more and more closely.

Experience in the training of testers in the use of the L.M.T. has proved that this is the point at which they meet with most difficulty. At the outset testers sometimes find it difficult to perceive any but the most obvious of qualities in the Designs, since these appear in a new and unfamiliar mode. Considerable practice is then needed to enable

The use of the L.M.T. in the Study of Normal Personality

the tester even to place Designs accurately in the group to which they belong, quite apart from being able to perceive their more detailed structure. Later these general qualities become so obvious that the initial difficulty is forgotten. As soon as a close approximation begins to appear between the preliminary and the final assessment, recording of the preliminary assessment can be safely omitted.

To make this point clear let us consider Plate 27, a Pattern made by a Spanish crystallographer. At first sight this Pattern might appear to be a meaningless collection of pieces of the nature of a Simple Slab. The detailed analysis of the structure, given later in this chapter, however, shows that it is a carefully constructed Tangential Pattern of great skill and subtlety.

When the general impression has been recorded, the detailed analysis should proceed as follows.

(ii) Assessment of the relation of the Design to the space of the tray

Here cultural differences appear immediately, and for full understanding of what follows the reader is advised to study the opening section of Chapter Ten before proceeding further. What is described in the rest of this chapter is based upon the analysis of European Patterns only.

In all European Patterns careful note should be taken of the position on the tray in which the Pattern is placed. Such Patterns made by normal people are almost invariably placed in the centre of the tray; if this is not done, some interfering factor is probably present, the nature of which will come out later in the detailed analysis of the Pattern or in the preliminary discussion of the Pattern with the maker.

Generally speaking, the same considerations apply to Representational Designs, but with the necessary modifications due to the internal demands of the Design itself. For example in Plate 11, the Design is related to the whole area of the tray and the slant is upwards towards the right. This is not due to any of the factors considered later in this chapter regarding the relationship between Patterns and the available area of the tray, but because it was the maker's intention to suggest an upward flight of birds.

In Conceptual Designs the question of relationship between the pieces as arranged and the available space of the tray has little mean-

The Use of the Test

ing; only those considerations are operative that directly refer to the concept presented by the arrangement.

(iii) Classification of the Designs

As already explained, Designs should first be classified as Representational, Conceptual or Abstract; and then as Compact, Intermediate or Spaced. The individual Design should then be placed within its appropriate categories.

Designs of normal people vary much more widely than those of any other class of subjects, and greater difficulty will be found in placing them within the appropriate category than with many neurotic Designs. This is an advantage however, since wrestling with it sharpens perception and increases understanding in the tester. But the tester beginning to study the L.M.T. will be wise to start by arranging designs in two groups: (1) those that fall immediately into the standard groupings, and (2) those that are difficult to place. In this way the eye becomes trained, and more and more Designs fall quickly and accurately into group (1), leaving a continually diminishing number in group (2). With practice, the tester will come to assess the class to which Designs of class (1) belong with almost automatic ease; whereas Designs of group (2) may need very careful analysis, and even after expenditure of the greatest care upon them there may still remain Designs that cannot be classified. These constitute a check on the method, and it is by careful and continual study of them that fresh understanding of the whole test is gained.

4. DETAILED STUDY OF THE DESIGNS:

ABSTRACT PATTERNS

(i) Centralised Abstract Patterns

(a) Compact. In European collections of Abstract Patterns from normal people, the vast majority take the form of Compact Successful Centralised Symmetrical Patterns. The main focus of this chapter will therefore be the mode of analysis and interpretation of differing types of these. As a mode of demonstration of the method by which this is carried out, a progressive series of Patterns (one Intermediate and two Compact) has been selected to show the inter-relation of Patterns amongst each other and the different uses that can be made of simple central constructions.

The use of the L.M.T. in the Study of Normal Personality

Example one. We will begin our study with three Patterns which arise from a central star (see Plates 22, 23 and 84). These all fall into the class of Popular Patterns and have therefore common qualities; they also differ from each other in ways that reflect significant differences in the personality of the makers. Let us therefore begin by considering Plate 23. This is an Abstract, Compact, Successful, Centralised Pattern with Recurring Form, symmetrical both in form and colour.

The angles at the outer edge of the star are filled in with pairs of diamonds exactly repeating the arrangement of diamonds in the central star and making an outer ring in which two types of angle occur: a right angle and an acute angle. This creation of two sizes of angle produces the possibility of great variation in construction of these Patterns. Considerable familiarity with star-centred Patterns is necessary before the full range of this variation can be appreciated.

In the Pattern under study, one possibility only has been used, that of filling in the acute angles in the outer circle with a further circle of eight white diamond pieces. These eight white diamonds turn the Pattern into a compact arrangement of eight lozenges pointing towards the centre (each composed of four diamonds) with a wide angle between them.

If we consider this Pattern in relation to Plate 22 and Plate 84, we see that in Plate 22 the subject has chosen to fill in the eight right-angled spaces in the outer edge of the central star with half squares, thus producing a hexagonal medallion, or Elaborated Fundamental. The finished Pattern would be classified as an Abstract, Intermediate, Successful, Centralised Pattern with Recurring Form, symmetrical both in form and colour: sub-group, Circular.

But the maker has failed to realise that the right-angled triangle with which he has filled in the angles of the star is actually half a square, and that the diagonal will therefore be longer than the side of the square. The maker of Plate 84 has met this problem of the diagonal by using the long side of the scalene, which, when placed against the diagonal of the square enables him to create a third ring of pieces around the centre point. The maker of Plate 22, on the other hand, having placed his squares and wishing to fill in the spaces between them, also uses scalenes, and by placing these vertically by the sides of the squares he succeeds more or less in filling the spaces between the squares; but in doing so he leaves an indented space on the outer side of each square. Not satisfied with the size of his Pattern, he repeats the central block of two diamonds and a half square in the outer rim, and then uses the simplest piece, the square, to fill the spaces left between them, thus reaching the rim of the tray in the transverse diameter.

The Use of the Test

The maker of Plate 84 attempted to add a second row of scalenes fitting against the first, but was at first unable to grasp their shapes sufficiently to succeed. Later he saw and corrected his error.

Whereas the maker of Plate 23 was satisfied with an eight-pointed star which stood free of the edge of the tray and well in the centre, the maker of Plate 22 wanted to have a more imposing wheel shaped Pattern, while the maker of Plate 84 continued his outer edge first with equilateral triangles, and then with obliquely placed diamonds, and called it 'a wheel with stakes in it'.

These three Patterns are good illustrations of different developments of the star centre which is often found in Patterns made by normal European subjects. They also illustrate certain important comparative points in interpretation.

Having considered the forms of these three Patterns, if we compare the use of *colour*, the differences are as instructive as the variations in the manipulation of the pieces.

In Plate 23 three colours – red, yellow and white – are used in the simplest way. The red and yellow alternate, both in the central star and the outer ring; and since the alternation is repetitive, it serves, in effect, to emphasise the star quality of the Pattern rather than to obscure it. Addition of the white pieces to the outer rim again brings out the star quality of the centre. In Plate 22, on the other hand, the distribution of the colours obscures rather than emphasises the central star. The four colours used are disposed symmetrically, each colour being met at the point in the centre of the Pattern by similar coloured pieces, so as to form a diagonal of this colour. The square with attendant scalenes and the diamond and half square components of the two outer rings are made each of a single colour placed opposite the same coloured diagonal of the central star. But, as two diamonds are needed for the individual items of the second circle, there is here an element of unfolding, one piece of colour projecting somewhat into the neighbouring colour. Similarly with the squares that fill in the spaces in the outer circle. Once having started on this plan of concentric circles with radiating colour, there is no escape from this deflection of the colour from the straight *radii* so that the general effect of the whole Pattern is that of a coloured wheel. This effect was, however, unintentional in contrast with the intentional construction of a wheel in Plate 84.

The distribution of colour in Plate 84 illustrates the immaturity of the maker (a boy of eleven) which we have already met in his difficulty in manipulating the scalenes. He has used four colours in the central pointed star but he has disposed them wrongly, so that al-

though he achieves his object of matching the colour of the half squares that fill in the angles of the star to one of the adjacent diamonds, he does not succeed in his wish to make each colour meet the same colour across the diagonal of the star. There is the same failure in arrangement of colour in the first ring of scalenes. But from this point on his arrangement is entirely symmetrical, yellow alternating with white in the second ring of scalenes, in the equilateral triangles, and in the outer ring of diamonds, red scalenes separating the arms of the wheel from each other.

It is this possibility of different developments of a central Pattern which gives to Mosaic Patterns a resemblance to music, in which a single theme can be developed by different composers into totally different patterns of sound. It also makes very complex the interpretation of individual Patterns.

Interpretation. We must now consider the interpretation of these three Patterns both in relation to the subjects that made them, and in comparison with each other. All three were made by English boys of somewhat above average intelligence, their ages falling in the same range: nine to eleven years.

The maker of Plate 23, having hit upon one of the usual fundamental uses of the pieces to make a star, has given it a certain amount of originality by his choice and arrangement of the colours; these express a temperament naturally cheerful and possessed of a sense of order and balance. At the same time, the limitation of size of the Pattern, in contrast to the proliferating tendency of the other two, taken together with the white outer ring, indicates a certain inhibition and limitation of output; and the use of white diamonds as his outer ring is a sign of a self deprecating quality and a desire to conciliate the environment, which is in marked contrast to the cheerfulness of the inner part of the Pattern. This is a boy, then, of average ability with potentialities of order and cheerfulness who has a poor feeling contact with his environment and is unable to express his inner energy in his outer behaviour. In life this boy was the only son in a family of five children. The mother was an unintuitive, unsympathetic, dominating woman, very determined that her son should fulfil the role of an English country gentleman. The father was a pale, ineffective character who effaced himself as much as possible within the role of

The Use of the Test

a landed proprietor and took little part in the upbringing of the boy. This Pattern exactly expresses the boy's situation: in himself he was an intelligent and reasonably competent boy, but he was made to feel at a disadvantage in every aspect of life, and had therefore withdrawn into a somewhat fixed outer personality which, wherever it made contact with his family, he tried to make as neutral and unobtrusive as possible.

The maker of Plate 22, on the other hand, has followed the impulse so common in children and simple people of wishing to use as many colours as possible. His control of his intentions is much better than that of the third boy, who also desired to use four pairs of colours but was unable to achieve a proper distribution of them in the diagonals. In contrast to the maker of Plate 23 the maker of Plate 22 has a strong tendency to allow his energy to stream outwards, with little attempt to organise it. He is lacking in invention and satisfied with something that appears to look right, without tackling any intricate problem. On the other hand the colour control and the pleasing effect of the result suggests a more expansive and artistically more gifted individual than the maker of Plate 23. This is the Pattern of a boy whose relations with the external world are good, and who has a freer contact with his impulses than the maker of Plate 23. He takes pleasure in colour, enjoys the use of his energies, and has confidence in his acceptance by his environment. Although his energies flow outwards to the limits of the tray he is without an urge to organise them elaborately, as is the maker of Plate 84, or to put deprecating bounds to them as is the maker of Plate 23.

In actual life this boy was the only son of a professional family and was somewhat handicapped by a clumsy gait. His family background was excellent, both parents taking a great deal of trouble over him and doing all they could to balance the natural shyness among other boys which this handicap brought about. He was intelligent, had an excellent capacity to plan and carry out tasks, was persevering in everything he undertook and, although shy, was warm hearted and expansive.

The maker of Plate 84 tried very hard to produce something more difficult than he was spontaneously able to construct. The ability however that he showed in correcting his mistakes and the deftness of manipulation of the pieces displayed in carrying out his correc-

The Use of the L.M.T. in the Study of Normal Personality

tions indicate a high level of practical and manipulative ability and interest in planning and construction, together with determination to carry through to a successful conclusion anything he has undertaken.

A striking quality in this Pattern is the concentration of black towards, and in the centre of, the pattern, and its contrast with white and yellow on the edge. The Whirling movement of this Pattern, taken together with the manipulative dexterity, suggests a boy of considerably greater vigour of personality than either of the other two. On the other hand, the placing of white diamonds at the edge, here as in Plate 23, indicates a deprecating attitude towards the outside world and a lack of warm contacts with his fellows.

In real life this boy was the only son of a marriage in which the mother, having divorced the father (who married again), had obtained custody of the boy. He was an intelligent, active and physically powerful lad who was unable to make satisfactory contacts with any of the persons in his environment owing, not to faults in himself, but to the severe neurosis of his mother.

The term Popular which applies to all three of these patterns, has to be interpreted (as in the Rorschach Test) in the light of a general analysis of the Patterns of the major culture or of the sub-group within which the subject lives.

In these three Patterns therefore we have average examples of the ordinary output of English children, which have been chosen because their starting point is a Fundamental Pattern.

Example two. We pass now to more complex examples, and will consider together three Patterns of the Ingenious class, represented in Plates 25, 26, and 27.

Having considered three Patterns by children, we will now take three adult Patterns, two made by men and one by a woman.

Each of these Patterns arises from a central equilateral triangle, placed with one side parallel to the bottom of the tray (in Plates 25 and 26) and at an angle to the base (in Plate 27). All three fall into the same general categories of Abstract, Compact, Symmetrical, Successful, Centralised Patterns with Recurring Form but their detailed analysis gives very different results.

Plate 25, made by a R.A.F. Officer, offers some features of special interest. It is Symmetrical in form about a vertical axis, Asymmetri-

The Use of the Test

cal in colour : sub-class, Triangular. The detailed analysis would run as follows :

All the five shapes have been used to construct a Pattern which arises from a central equilateral triangle; this triangular shape being repeated in three heavy straight lines, constructed of half squares which meet at the points and divide the Pattern into an outer and an inner portion. In the centre of the Pattern a Fundamental Triangular Pattern has been constructed by placing equilateral triangles against the three sides of the centre triangle, thus bringing the base of this Fundamental triangle opposite to the base of the whole Pattern. This procedure is now repeated by the construction, against the sides of this larger central (Fundamental) triangle, of three other Fundamental triangles; but this time the two base triangles are composed of two scalenes. By this arrangement the position of the base to the triangle is again reversed so that it falls parallel to the base of the central triangle. The varied use of colour in this central portion makes it difficult, without practice, to see this ingenious arrangement; but if the Pattern is laid out on the tray using black and white pieces only, with black for the central triangle, white for the central Fundamental Pattern, and black again for the outer three Fundamental triangles, the construction becomes clear. This larger triangle having been completed, the subject has outlined it with the three lines of half squares, and to emphasise the division into inner and outer sections has returned those lines in an architectural manner by the placing of diamond pieces at right angles to the ends of the lines. This return gives rise to an oblong space on the outer sides of the three lines, and these spaces are filled with a Symmetrical Pattern of rectangles in which use is made of the difference in width between the square constructed of two halves and a rectangle of two scalenes, to produce a stepped effect. We have therefore at this point a completely Symmetrical construction which could as easily stand on one side as on another. The Pattern exploits the whole area of the tray but is not essentially related to the edge or to its shape. The subject however wanted his Pattern to stand squarely on a base, and constructed it with the short side of the tray nearest to him. He therefore completed the Pattern by filling the angle between the right and left returned diamonds with an obliquely placed pair of equilateral triangles; but in the angle of the third pair of returned diamonds he created an apical space by sliding the two apart. By this simple device the maker achieved a top and bottom to his Pattern so that it stands securely on the opposite side.

The use of *colour* in this Pattern is as complicated as the use of form. The whole is constructed of green, yellow and blue, with the addition of black and white, and these are most interestingly disposed. Blue, green and white are used for the delimiting lines, and are alternated in position with the same colours for the two triangles at the points of junction of the sides. These lines form the symmetrical colour-base for the Pattern, and allow of a symmetrical distribution of the rest of the colours without obscuring the triangular form of the Pattern. To emphasise and balance the symmetry, two heavy black

The Use of the L.M.T. in the Study of Normal Personality

squares are placed in the centre of each return to which the eye is attracted immediately, and the effect of triangularity made secure. The half squares and scalenes grouped around these squares are alternated in colour, only blue, green and white being used, and the colours are so disposed that they emphasise the colour of the returned line within which they appear. When we come to the filling of the triangular space formed by the junction of these three lines the same versatility is displayed. Black, blue and white form the apices of the inner triangle; black, green and white the triangles that join the apices to the points of the yellow triangle upon which the whole Pattern is based. Black, green and blue form the substance of the inner Fundamental triangle, each of these being flanked by pairs of matching scalenes in black, green and yellow. The final spaces are filled on the left and top by matching scalenes of white and blue; but to break the symmetry and add flexibility, a single change is made on the right by the substitution of a yellow for a black scalene – without this the Pattern would have been completely Symmetrical. If this Pattern is set out on a tray and a black scalene substituted for this yellow one, the value of this piece in breaking up the uniformity of the whole and giving a pleasing irregularity will be apparent. In this respect the colour of this piece can be compared with the change of shape of the lowest right hand green triangle in Plate 29 and the asymmetrical placing of the yellow scalene. Both irregularities are deliberate actions directed towards breaking a too great uniformity.

Interpretation. This is a very masculine Pattern, the three arms of the large triangle suggesting a well-built construction, such as a tent, which depends for its stability upon an accurate balancing of gravitational stresses. It is completely centralised within the space of the tray, and although the two black squares project beyond the rest of the base, this gives the whole an appearance of poise rather than instability. The complexity of construction both in the use of form and colour, taken together with the length and solidity of the sides of the outer triangle, indicates a constructive and engineering attitude to life. On the other hand the solidity of the three shallow rectangles formed by the outer arms, suggests a certain heaviness and rigidity as well as stability of character structure, particularly in the relation between the maker and his practical environment. The three pairs of equilateral triangles with the unexpected device of the gap between the two at the top, are a curious feature; taken together with the colour variations in the inside triangle they suggest an unexpected flexibility, in contrast with the rigidity of the main structure. When we come to the central triangle, the freshness and ingenuity of the balance of colour is most intriguing, and suggests an inner personality

The Use of the Test

with poetic and subtle possibilities. The striking fact about this Pattern, particularly considering that it was made by a member of the fighting forces, is the absence of red and the predominance of white. The colours are those of the countryside, and it is noteworthy that the base of the Pattern is white, suggesting some blankness in the basic structure of experience. The white top is also unusual and again suggests a reserve or deprecating quality in the contact of the maker with his environment. The amount of black in the Pattern, particularly the heavy black squares, while adding to the balance and definition of the Pattern, is likely to be of significance both in the experience and the temperamental make-up of the subject.

In real life the maker was the youngest son of a large family of boys and girls, and the only one to have any physical handicaps. He was brought up entirely in the country with a disability of the feet which necessitated his undergoing a number of operations. He did normally well at school, showing himself to be a boy of equable temperament and unusual sweetness of disposition, free from resentment. He joined the Air Force, as the fighting arm to which his disability would admit him, and rose steadily through the integrity and thoroughness of his work until he reached an administrative and instructional post of moderate distinction. In temperament he was quiet without being unduly reserved, resourceful and adaptable, liked and respected both by those above and below him in command.

Plate 26 also arises from a central triangle, but here the three sides of the triangle form the starting point for three massive arms which protrude from the centre, enclosing within the angles which thus arise between them three hollow circles constructed of scalene triangles. Both form and colour are strictly Symmetrical, and the way that scalene triangles are fitted into the angles of the arms is highly ingenious.

In this Pattern it is a half square whose long side is fitted against the side of the central triangle, instead of, as in the previous example, the side of an equilateral triangle. The same device of double diamonds embracing a half square is used as in Plate 22 but in a reverse direction. A second pair of double diamonds on each of the three sides completes the arm, which is terminated by two scalenes deliberately used in a non-geometrical fashion to produce a square end to the arm. Within the wide angles left between the arms, a circle of scalenes is ingeniously fitted, so arranged that each short end when applied to the long side of the previous scalene divides it into two parts, the free edges

The Use of the L.M.T. in the Study of Normal Personality

forming an inner hexagon while the outer edges of the long sides form an outer hexagon circle.

Two colours, blue and yellow, are used together with black and white. In the arrangement of black, blue and yellow the triangular character is maintained, white being used only to separate one triangular element from the next.

Interpretation. Here we have an ingeniously constructed, completely Symmetrical, Original Pattern, the main characteristic of which, from the interpretative point of view, is the contrast between the heavy solidity of the three radiating arms, and the delicate defined space within the three hexagons. This is an accurate, closely reasoning nature that allows no place for impulse. The use of white for the centre triangle and to form half of each of the arms, when considered in relation to the predominance of the darker colours and the complete absence of red or the natural colour green, suggests a city worker whose life is directed towards such subjects as mathematics, science or architecture. The control of impulse suggested by the absence of red is supported by the flat ends of the radiating arms. While the arrangement of the colours is pleasing, and there is evidence of considerable taste, it is a taste that results from careful and, disciplined thought rather than from intuition or aesthetic impulse. Indeed the whole Pattern has the air of a scientific diagram. It is our experience that when interior spaces occur in a Pattern, even in a form as ingenious and intimately related to the Pattern as the present one, they indicate a certain sense of inner insecurity. The whole Pattern is therefore that of a careful and accurate thinker, a personality interested in colour and form, able and ingenious, but either lacking in the feminine qualities of intuition, emotion and flexibility, or having completely subordinated these to the purposes of her life.

In life the maker was the second girl of two sisters, both of whom studied medicine. Her work was solid and conscientious, and her contacts with her fellows of an ordinary kind. After qualifying she spent a short time in the practice of clinical medicine, but found the risks and uncertainties of clinical work unsuited to her temperament and turned instead to pharmacology in which she achieved a moderate distinction, becoming responsible for teaching and research in a University department.

In Plate 27, the third Triangular Pattern of this group, the maker uses the central triangle differently.

The Use of the Test

In this Pattern the triangularity of the centre triangle is deflected, as it were outwards, by first fitting against its sides scalene triangles, the long sides of which are placed against the side of the central triangle.

Three long arms of single diamonds are laid against the longer of the two outer sides of the scalene triangles. These three arms project at a tangent to the central triangle, putting the Pattern as a whole into the class of Tangential Triangular Patterns. The arrangement of the rest of the pieces is so complicated that a drawing has been placed beside the coloured illustration to show the sections into which the Pattern falls. This makes an interesting exercise in figure/ground relationship. It is hardly possible to separate colour and form in this Pattern since they interweave and present an intricate and unexpected number of triple facets.

The most important of these facets are as follows: (1) At the apex of each point of the central triangle, and touching at the points, are three red equilateral triangles. To the sides of these are fitted the long sides of two yellow scalenes and of one white half square. This is a variation of an arrangement apparently similar to that of the central triangle by the substitution of a half square for a scalene, with alteration of colour. (2) Against the left side of each long arm a red square is placed, flanked by two blue half squares, giving a wide obtuse angled effect to this part of the circumference. (3) Three white equilateral triangles fill in the space between the other side of the arm and the red triangles, with their adjacent scalenes and half squares, and in this way repeat in relation to the whole Pattern something resembling the function of the white scalenes in the centre, and so on. The ingenuities of this Pattern are almost endless; indeed it represents the climax of ingenuity and complexity so far reached in our experience. What is interesting about this Pattern is not only its ingenuity and complexity but also the freedom with which geometrical and non-geometrical uses of the pieces have been combined.

Interpretation. This Pattern was made by a Spanish scientist whose main preoccupation was the science of crystallography.

In contrast to the two preceding triangular patterns this one is without any aesthetic quality. Where the central triangle in Plate 25 was yellow and in Plate 26 white, here it is blue surrounded by white scalenes. The chief characteristic of the Pattern is its extreme ingenuity. Considered aesthetically it is an ugly Pattern; the maker has concentrated his interest upon interior rather than exterior balance and repetition of form. It would be hard to imagine a greater contrast than that between this and the preceding Pattern. In Plate 26 everything is clear and definite; in Plate 27 hidden and unexpected. In Plate 26 only the coldest colours are used; Plate 27 gives an impression of passion and drive. In Plate 26 the three projecting arms are blunt ended; in Plate 27 they project in points beyond the mass of pattern.

The Use of the L.M.T. in the Study of Normal Personality

Whereas in Plate 26 (and also in Plate 25), white is an essential part of the structure of the Pattern, in Plate 27, apart from the central scalenes, white is purely incidental and appears to be used merely to secure variety. The same considerations apply to the use of black in the three Patterns. In Plate 27, although blue and green are used, the whole impression is that of an urban personality, and the Pattern suggests a complex character: subtle, unexpected and possibly to some extent unaccountable. The ingenuity of the triangularity, combined with the disregard at many points of the exact geometric quality of the pieces, suggests that the discipline of the personality is one of thought rather than of feeling. The uneven edge to the Pattern suggests a lack of conventionality in relation to the outside world, which is in marked contrast to the other two Patterns. And the interesting difference between the wide flat edge made by the two blue half squares – the only use of blue other than the central triangle – and the projecting yellow diamond, suggests a combination in the character of the subject of impulse and daring on the one hand, and caution, possibly even obstinacy, on the other.

It will be seen therefore that although these three Patterns fall into the same general class, they show profound differences in construction and therefore in significance.

It is this combination of fixity of materials, and infinite possibilities of variety in combination, which is the essence of the test. Each subject chooses certain possibilities of the pieces to use in his construction. Familiarity with the possibilities of the pieces will show the tester immediately, as he watches the subject constructing his Pattern, whether he is going to follow a well trod path or think out something for himself; and if the latter, along which road his thoughts are travelling.

These analyses of six Patterns are designed to explain the most usual manner in which the construction of a Compact Pattern is analysed in detail.

Example three. There is however another mode of analysis to which some Compact Patterns can be subjected. As an illustration of this we will take Plate 98.

This is a Pattern carried out in green and yellow, with one irregular interior space in the upper half. It is a Compact, Successful, Central-

The Use of the Test

ised, Abstract Pattern with Recurring Form, symmetrical about a vertical axis in form and colour.

If the general structure of the Pattern is studied it will be seen to be composed of three parts: an upper horizontal portion, a middle portion, and a smaller lower element. In all of these the colour green is used in a triple arrangement. If the upper horizontal portion is moved away from the yellow diamond upon which it pivots and the lower horizontal element is similarly detached, an amusing animal-like figure emerges from the middle. This has somewhat the appearance of a teddy bear, the head of the bear being held in the upper and the feet in the lower portion of the Pattern. (It is possible also to regard the circular central portion of the upper bar as forming the head, in which case the yellow diamond would be the neck; the whole would still give the effect of an amusing stout animal). In this Pattern we have therefore the presentation of a childlike, friendly, central figure, held closely as in a vice in the lower part and given a somewhat heavy upper weight which fits upon it but which can also be considered as forming its head.

The upper horizontal unit has a central almost circular portion, and two flanking wings. The three centre equilateral triangles form half of a Fundamental hexagon; but the rather ingenious arrangement of the four scalenes below produces an original effect, and gives the whole bar a solid and architectural air which in its heaviness adds a Pendant aspect to the Pattern which is carried out in the lower green and yellow element poised on the point of a green triangle.

This Pattern therefore, like the anthropoid pattern of Plate 38 (discussed in Chapter Nine), belongs to a type that stands midway between Representational and Abstract, in that although the essence of the Design is that of an Abstract Pattern, yet it carries within it a suggestion of a Répresentational content. There is however a crucial difference between the anthropoid pattern of Plate 38 and the teddy bear that emerges under analysis in the pattern we are now discussing. The dominant feature of Plate 38 is its Pendant nature and the anthropoid aspect involves the whole of the pattern. In Plate 98 the teddy bear, fixed firmly in the two cross pieces of the Pattern, is the minor aspect of the Pattern, and is in itself firmly balanced and solidly constructed. Considerable practice in the analysis of Patterns is needed before this mode of dissection of a Pattern can be confidently carried out.

Interpretation. This is the first of four Patterns made by European women that have been chosen for study in this chapter because they

The Use of the L.M.T. in the Study of Normal Personality

present personalities in which two very different elements are dominant. Two of them have successfully integrated these elements into one whole. The third failed altogether to do so and paid the price in mental breakdowns. In the fourth, the youngest, evidence of strain was realised sufficiently early for adequate help to be obtained. The interesting fact about these four individuals is that the disharmony occurs in different elements of the personality. In the one we are now considering (Plate 98) the disharmony is between the emotional-human part of the personality and the intellectual. In Plate 101, however, the tension is between the practical organising aspect of the personality and the aesthetic-emotional. In the third (Plate 102) the conflict is between the individual and her family. In the fourth (Plate 103) it arises wholly within the interior self of a subject much younger than the other three. A full discussion of Plates 101, 102 and 103 will be found on page 198f.

To resume the analysis of Plate 98.

As has been shown on page 172 this Pattern falls into two separate elements which can be regarded as inner and outer aspects, and which are strongly contrasted with one another, though they blend together to form a convincing whole. The outer consists of green and yellow pieces combined geometrically but without strict regard to their dimensional similarities, so that, while this part of the Pattern gives a very solid and well-balanced impression, there is also something of the flexibility of an Am-type Pattern in its construction. We may take it that this upper horizontal bar expresses the relation of the subject to the external environment. The lower part of the Pattern is executed in the same colours and has, like the upper one, a solid green core. But in contrast to the upper part, this lower element is poised on a single point. Nevertheless the careful balance of the horizontal dimensions of the Pattern as a whole lends this feature an appearance of being securely poised, instead of being insecurely based. But, as already described, the inner portion of the Pattern has a totally different character: it displays a toy-like animal with an amusing air and suggests a friendly atmosphere.

This Pattern suggests that the personality of the maker has two markedly opposite aspects: one intellectual, constructive and practical, with a great deal of flexibility; the other child-like and warm hearted, with direct and simple reactions to people. The balance and poise of the Pattern as a whole, the harmonious use of the colours, suggest a well integrated personality with its own centre of balance which yet permits a free relation to the outside world. At the time when the Pattern was made, the writer said to the maker that it appeared to have

The Use of the Test

been made at a moment when the maker was faced with an important choice in either her internal or external life, to which she assented.

In actual life the maker was a gifted professional woman with her home in England, whose work brought her into intimate contact with people and called for considerable powers of intuition. She was a widow with one son, with whom her relation was excellent. After the death of her husband she concentrated her attention on original research work on the scientific side of her profession. In her professional relations with people, which are highly productive, her essential quality is the ability to make spontaneous contacts on the child level. But this aspect is, as her Pattern shows, an interior one, known to her patients. All her other external contacts are marked by balance, firmness of judgment and intellectual ability.

(b) Intermediate. We now leave the question of Compact Centralised Patterns and consider the analysis of Intermediate Centralised Patterns. Plate 22 is an example of such a Pattern. Its analysis and interpretation have been given above.

In the analysis of Intermediate Patterns additional attention has to be paid to the manner in which the Compact and non-Compact elements of the Pattern have been combined and to the proportions of the Pattern in which the two modes of use of the pieces have been employed. The variety of combinations in Intermediate Patterns is so great that in a book of this kind only very general rules can be given. The most important variations are as follows:

(a) Patterns such as Plate 22 in which the centre of the Pattern is Compact and the more loosely connected portions are on the periphery. In general it is found that such Patterns are made by subjects who have a good central personality structure and a flexible relation to the outside world.

(b) Patterns in which the reverse arrangement appears: that is where the central portion of the Pattern is loosely structured and the periphery constructed in Compact manner. These are people in whom the outer personality, the *persona* of Jungian psychology, gives an appearance of greater integration than is in fact the case, the exact degree and nature of the disharmony between the two depending on the detailed structure of the Pattern.

(c) Patterns in which the whole structure of the Pattern is Intermed-

The Use of the L.M.T. in the Study of Normal Personality

iate, that is only within groups of pieces does a Compact arrangement occur.

These are on the whole feminine types of pattern. In such patterns it is the whole that is important, not the exact structure of the parts, and in this aspect Intermediate Patterns resemble Am-type Patterns, but with the interesting difference that the wholeness need have no reference to the area of the tray. It is a wholeness within the mind of the maker which is projected on to the Pattern, and is not a response to the fixed external stimulus of the shape and area of the tray.

(c) Spaced. There remains to be considered the mode of analysis of Spaced Patterns. There is a certain handicap to the working out of satisfactory rules for the analysis of this type of Pattern, as Spaced Patterns are so much rarer than any other type that insufficient material exists for it to be possible to formulate more than tentative rules. With regard to the use of the pieces, Spaced Patterns are of two kinds: Patterns in which the pieces are placed with great exactitude, regularity of spacing being worked out with care so that in this respect the Pattern is as exact as a Compact Pattern; and Patterns in which no such exactitude exists but the pieces are put down with a certain carelessness.

In respect of what is said by the pattern, that is, what pieces are chosen and in which colours and how these are disposed about the tray, the usual rule holds good that 90 per cent of such Patterns are Symmetrical. Asymmetry when it occurs, is a matter of variation of overall shape of the Pattern rather than of placing of the pieces or variation in colour. So far no completely Asymmetrical Spaced Pattern has been met with.

Analysis of Spaced Patterns therefore proceeds in three stages:

- (a) Careful study of the Pattern and discussion of it with the maker to ascertain the degree of emphasis placed by the maker on exactitude of position of each and all of the pieces.
- (b) Noting of the part played in the total effect of the Pattern by the shapes, the colours and the balance of the Pattern.
- (c) Consideration of the relative importance in the total effect played by the pieces and by the spaces between them.

Analysis of the Pattern itself follows the same lines as for a Compact Pattern.

The Use of the Test

Summary. In regard to the choice of a Compact, Intermediate or Spaced mode of handling of the pieces, among European subjects a very high percentage of men make Compact Patterns; and, using the term in the Jungian sense, it is the masculine element in the personality to which this mode of combining the pieces appeals. There is, in the fitting of piece closely to piece, and in the working out of the possibilities of exact combination between the pieces, a strong appeal to the constructive element in personality. On the other hand the fact that certain pieces drop immediately into place to fill spaces left by other pieces (as for example the use of half squares to fill in the angles between the points of a diamond star, or the placing of equilateral triangles against the outer edge of a central hexagon) appeals to children and to simple natures as a delightful discovery which produces an attractive effect with very little effort.

In Chapter Ten it will be seen how fundamentally different is the attitude of many American subjects to the possibilities of combination of the pieces. Here the close fitting of piece to piece only rarely makes an appeal (as in the Collective Experimental type of Pattern); and as far as our very limited experience goes, Ingenious Compact Patterns form only a small proportion of American responses.

To make a successful Compact Pattern of any size or complexity, close attention to the shapes of the pieces is essential, and it is the unexpectedness of the new shapes formed in this way that largely forms the attraction of the effort. Individuals who are less interested in this aspect of the task tend to allow themselves at certain points in the Pattern to relax their closeness of attention to shape, and so to loosen the construction either by connecting elements of the Pattern to other elements by their points or by placing single pieces standing freely by themselves. Both modes of use of the pieces are exemplified in Plate 22.

There is a very real personality difference between individuals who, as a class, construct Compact Patterns and those who, again as a class, use the Intermediate mode. On the whole Intermediate Patterns are made rarely by men and very frequently by women. The women who construct Compact Patterns have been found to be of two types: either those in whose daily life and work there is little scope for the play of feeling, their activities being of a scientific or

The Use of the L.M.T. in the Study of Normal Personality

administrative nature, or housewives and home makers whose attention in daily life is concentrated also upon practical tasks. This concentration of attention upon the practical side of life is natural for men, but in women leaves essential parts of their natures unexercised. Compact Patterns when made by men have therefore a different significance from those made by women.

When an Intermediate Pattern is made by a man it often indicates a richer and more rounded attitude to life if the Pattern that results is well constructed and interesting in form and colour. If the Pattern, besides being Intermediate in type, is also weak in design and uninteresting in use of colour, there may be a certain femininity in the temperament of the subject.

Spaced Patterns occur more frequently in the responses of women than men. But again it is the form of the Pattern which is more decisive than the mere fact of adoption of a Spaced technique. When a Spaced Pattern is made by a woman it is usually not only Spaced in type but also rounded and graceful, often not conforming to any of the standard forms. Spaced Patterns can, however, also be rectangular and regular, and produce an effect of strength and decision. Such Spaced Patterns may well be made by men, and the fact of the response appearing in this mode may be the expression of a nature in which the intuitive faculty is strong. Only when statistical analysis has been carried out on the results of careful analysis of large numbers of Patterns of normal men and women in different walks of life, in which the deductions have been carefully checked with ascertainable facts, will the validity of these tentative correlations be ascertainable.

We have considered the significance of the three modes of use of the pieces in relation to Centralised Patterns because it is in this type of Pattern that these differences are most clearly seen.

In Patterns which have a relation to the whole area of the tray the question of the attitude to space plays so prominent a role that the distinction between a Compact, Intermediate or Spaced use of the pieces becomes secondary. The analysis of these Patterns will therefore be considered separately.

It may be asked, of what value is it to separate Centralised Patterns into the groups described in Chapter Three and what is the interpretative significance of the different groups.

The Use of the Test

(ii) Significance of the standard categories

The answer is on two planes. Experience in teaching the test has shown that when the beginner sets out to gain an understanding of the whole range of Patterns which can be made with the mosaic material, the varieties of Pattern confronting him are so great that if he is to gain mastery of the significance of responses to the test it is essential that the task should be broken up into sections, and it should be made possible for any tester dealing with collections of Designs to separate these into groups bearing similar characteristics, so that these can be studied as a group and their similarities and differences identified and compared.

There are two ways in which this can be done. Patterns can be classified according to their overall shape, as is done in Chapter Three; or they can be considered in relation to the arrangements of the pieces which form the core of the Pattern; or both modes of study can be combined as in the three groups of Patterns analysed above. When familiarity with responses to the test has been gained, all this takes place automatically; but to begin with, a proper framework must be constructed. When these tools of thought have become the automatic possession of the tester, it becomes obvious to him that a Circular Pattern, for example, can arise from a Hexagon or Star Fundamental Pattern and from several other arrangements of pieces, and that a hexagon and a star centre can be developed by different subjects into Patterns whose overall shape *can* fall into any of the other classes. These two basic modes of classification together with the question of the mode of use of the pieces, form co-ordinates upon which the position of a given Pattern in relation to all possible Patterns of that type (i.e. Centralised or not) can be plotted.

The three Patterns studied in *Example two* above show how different can be the significance of the total Patterns which, from the point of view of classification, fall into the same class.

It is these considerations which make it difficult to describe the significance of the different shape of Centralised Patterns taken alone. Yet some pointers do exist, which can be stated in a generalised form as follows:

(a) Square or Oblong Patterns. These are the most non-committal of all the forms of Pattern; a Square Pattern made of squares (see Plate 24) has therefore the general significance of simplicity of response to

The Use of the L.M.T. in the Study of Normal Personality

external situations and 'the choice of the easiest way'. Subjects who make such Patterns are, in the main, those who are confused or irritated by complex situations or at having the complexity of any situation forcibly brought to their notice. They prefer to 'keep' on the practical level, and to simplify all situations to elements that can be easily grasped and as easily responded to.

(b) Linear Patterns. These come next – if not equal – in order of simplicity; but they indicate a more continuous approach to an external problem. One can note the same differences in conversation among simple people. One individual will prefer to recount all the details of one aspect of a situation or an event in the order in which they occurred; the attention of another will be caught by a single facet of the situation, for example the hat worn by a prominent person in an assemblage, and will go on to discuss the subject of hats in endless detail, in relation to that and similar gatherings, before stating clearly what the gathering was about or relating it to other similar events.

(c) Star shaped Patterns. These are the next easiest to construct. There are many varieties of these. The maker of a Star shaped Pattern is an individual more open to suggestion than the usual maker of the first two classes; for if eight diamonds happen to be taken out first from the box they make themselves, as it were, into the Star Fundamental, and this shape, having grown on its own on the tray, suggests to those open to such suggestion the following out of its radiating spokes with one or other combination of pieces. Quite a large Pattern can be achieved in this way with very little effort, and if the colours are well chosen, with a most pleasing effect. A subject making such a Pattern is usually quite unaware of the complexities and possibilities afforded by the other shapes in the box and uninterested in them; and if he is satisfied and pleased with this result, tends in life also to be pleased and satisfied with the more obvious aspects of any situation.

(d) Circular Patterns. With Circular Patterns the first essentially complex form appears. Truly Circular Patterns can only be made either in the form of the second Pattern in Plate 43 or through use of the pieces in an Intermediate fashion, either placed tip to tip, or through making use of space as in Plate 22. Compact Patterns loosely regarded as Circular are actually hexagons; and for the purposes of interpretation these two forms are equivalent.

Subjects who make Circular Patterns are very generally speaking

* *The Use of the Test*

of two types : either those, like the maker of Plate 22 whose aim is to have a good relation with the outside world and therefore wish to present a smooth surface to it; or those, like the boy maker of Plate 43, who wish to contract their contacts with the world into the smallest possible space so as to present as small a surface as possible to friction. Some individuals make an amusing and ingenious expansion of this aim, as in the larger pattern of Plate 43, by limitation of colour to black and white and by composing the Pattern of broken hexagons, with the result that, while the whole is non-committal in the extreme, the hollow centre of the small Pattern is replaced by repetition of broken forms in the larger.

(e) Oval Patterns. These are difficult to make and are rare. They attract personalities to whom difficulty and complexity offer a pleasing challenge, while the apparent smoothness of the outside disguises the skill of the construction. Plates 28 and 29 are both made by professional women; Plate 28 by a competent professional worker of good but not outstanding quality, and Plate 29 by one of the most distinguished women of this age. In Plate 28 there is a certain suggestion of a Winged Pattern which *might* mean that this outer consistency was gained at the cost of inner conflict. In Plate 29 the contrast of the solidity of the compact base and apex and the lightness of the sides and centre suggest a personality of unusual flexibility.

(f) Triangular Patterns. These are unexpectedly frequent and can indicate a greater complexity of intellectual structure in the maker than the previous forms. Subjects who make triangular Patterns have none of the adaptability of those who make Oval or Circular forms; there is in most of them a liking for complexity for its own sake and a pleasure in solving problems demanding ingenuity. But if the Pattern is of the simple shape of a greatly enlarged equilateral triangle it can have the same qualities as a Square Pattern, large equilateral Patterns being achievable by very simple manipulation of equilateral triangles.

(g) Growing Patterns. These bear perhaps the most definite significance of all the group. These are Patterns which are solidly based and grow upwards. Plate 30 is a typical member of the group. Growing Patterns are made by individuals who feel themselves to be solidly based in life and who construct on this base a structure that embodies ambition and initiative. They are independent personalities,

usually of sound abilities and with a relation to their practical and social environment which is of their own creation.

(h) Repetitive Patterns. An almost complete contrast to the maker of the Growing Pattern is the maker of the Repetitive Pattern.

Repetitive Patterns are rare, and not enough evidence has as yet accumulated to make any very definite pronouncement about their significance. As far as the evidence to date goes, it appears that makers of Repetitive Patterns are cautious individuals who dislike change and hurry, who are interested in continuity and who have an obsessional element in their personalities. The concept of space here plays a significant part; the makers like to see all round a problem and dislike final conclusions and abrupt decisions.

All other groups of Pattern described in Chapter Three will be discussed in Chapter Nine.

(iii) Some particular characteristics

Repetitive Patterns bring us to the consideration of internal space.

(a) Internal Space. There is a fundamental difference in significance between the space that occurs within a Pattern as a Hollow Centre and that which appears deliberately as Defined Space. Only the latter will be considered here.* As Patterns with a Hollow Centre fall into the classification of Patterns indicating neurotic trends a discussion of them will be found in Chapter Nine. Patterns which contain Defined Space or Spaces are a very interesting variant of Centralised Patterns and relatively rare. As far as our evidence goes to date they appear to be made only by complex personalities whose interior thought is concerned with problems of values, and who have not reached a definite and solid, integrated *weltanschauung*. They are always people of superior intelligence and often those with an ambiguous relation to other human beings; but only careful analysis and detailed comparison of large numbers of such Patterns could bring out the essential characteristics of the makers of these Patterns, and such research is not as yet available.

(b) Movement. Movement in Patterns is a very important characteristic and has a varied significance. Chapter Ten contains a discussion

* External space and Irregular Designed Interior Space are discussed in Chapter Ten.

The Use of the Test

of the very interesting difference between the concept of movement in a Pattern as it occurs in Am-type Patterns as compared with that in Eu-type. The commonest form of movement in Eu-type Patterns, illustrated in Plates 46 and 84, is Simple Circular movement. This is a manifestation of energy in the personality and is quite unrelated to effectiveness. In general terms, Patterns with Circular movement, especially if as accentuated as in Plate 46, are made by subjects whose situation in life does not afford them full scope for expression of the energy within them but who are conscious of a certain restlessness and sense of unfulfilment.

Interior Circular movement, illustrated in Plates 47 and 48, carries a somewhat neurotic significance, as does Linear movement (see Figure 9), and will be discussed in Chapter Nine.

(c) Three-dimensional features. It is difficult to give any account of the three-dimensional aspect of L.M.T. responses, because much of what is involved falls outside the scope of this book. Certain arrangements of colour and shape in Compact Patterns of themselves produce a three-dimensional effect, as in Plate 83; but this may be quite involuntary and be perceived by the maker only after the Pattern is completed.

A three-dimensional quality can appear in Mosaic Designs in six ways: in the presentation of three-dimensional forms in Representational Designs; in perspective effects in Abstract Patterns; in the superimposition of pieces upon other pieces already placed; in the construction of a complete second layer of Pattern over a Pattern already made, part of which appears through the upper layer; and through the use of piling, or the spilling out upon the tray of numbers of pieces much as playing cards are slid out from a pack; and also by standing pieces on edge.

In the first variety the significance is the same as in drawings and paintings. The second, when deliberately constructed, is used mostly for the expression of aggressive ideas and feelings, or for the production of monumental effect, generally in relation to Growing Patterns. There is however a form of implied three-dimensional effect which is of considerable interest, and that is the construction of patterns that give the effect of one layer being laid upon another although in fact all the pieces are in the same plane. Such patterns resemble self-portraits in that they are made by individuals who recognise, when it is

The Use of the L.M.T. in the Study of Normal Personality

pointed out to them, that they are conscious of being in layers, if one may so put it, and in whom these layers of personality do not harmonise with each other. For example, it happens occasionally that when a Pattern is looked at from a little distance a cross may appear as the base of a Pattern upon the surface of which other constructions have been laid, although it was not intentionally designed by the maker.

Pieces superimposed upon other pieces may, especially in children, indicate the primitive kind of conception that occurs in children's drawings when two or more sides of an object are presented in the same drawing.

Layered Patterns, on the other hand, are deliberate, and the layering can be used either to heighten or to blur the effect of the basic Pattern. Such Patterns take a long time to construct and are made by subjects with complex personalities.

(d) Anthropoid Patterns. Centralised Abstract Patterns when finished sometimes carry a marked resemblance to some object or person. This resemblance can be: (1) perceived by the maker immediately on completion of his pattern; (2) unperceived by him but recognised when pointed out by the tester; (3) clear to the tester but denied by the subject.

In the first case this double significance of the Pattern adds to the material to be discussed with the subject. In the second, the fact of a Representational content having appeared in the Pattern without the direct intention of the maker brings it within the area of unconscious motivation, and will be further discussed or not according to the character of the interview during which the Pattern is made and the general objective and equipment of the tester. In the third case, the Pattern definitely steps over the line between normal and disturbed, and discussion of the implications of such Patterns will be found in the following chapter.

All cases of resemblance to objects in Abstract Patterns which are seen by the tester but not accepted by the maker, need to be treated with great caution, since they can so easily arise through associative processes existing in the tester's own mind and not in that of the subject.

The Use of the Test

(iv) Abstract Patterns related to the whole area of the tray

We have next to study the mode of analysis of patterns which are intimately related to the edge and area of the tray. We will take as an example one Pattern which falls on the border line between Intermediate and Spaced.

Example four Plate 99 was made by an adult English woman who successfully holds an executive position in a large and complicated organisation. Since discussion of the Pattern with the maker brought out that the placing of the pieces was exactly as she had desired it, the Pattern must be classed as Successful, although it is partly Asymmetrical. It is therefore classifiable as an Intermediate to Spaced, partially Symmetrical, Successful, Abstract Pattern with Recurring Form, with intimate relation to the whole area of the tray.

If the Pattern is studied in detail the following facts appear :

A red square is placed in what is clearly intended to be the centre of the tray; but owing to lack of attention to detail on the part of the subject, it lies actually in a position lower than the central line, a fact which dominates the Pattern – as will later appear. This is surrounded by a loosely arranged circle of eight diamonds in a spaced relationship to each other and to the centre square. No trouble has been taken to make the position of these diamonds exact. In the corners are four groups of pieces and one single piece; two of these groups are composed of three pieces and so arranged that each corresponds in form to that in the diagonally opposite corner; the one in the top left hand corner consists of two separate groups of three pieces, with one extra group of three in the bottom right hand corner. A single piece is placed between the two corner groups on the right hand side. The presence of the second group in the top left hand corner makes this corner Pattern take up more space than is available in the diagonally opposite corner owing to the failure to centralise the central red square. The interesting point about this Pattern is that had the maker seen that the central motif was placed eccentrically – though intended to be in the centre of the tray – it could have been moved up into the centre and enough space could have been left in the lower right corner for an exact repetition of the two groups in the top left hand corner. Since the maker has not seen this she has made a good compromise by superimposing the two scalenes on the blue square so that the balance is kept but the repeat is not identical.

The general effect of the Pattern is of scattered points of white and blue appearing with the red (or white) in one diagonal, and green in the other. The interesting quality about the colour in this Pattern is the blend of Symmetry and Asymmetry. Red appears in each unit except in the lower right hand corner, and here there is substituted for it the single red diamond against the right hand edge. The red square in the centre is balanced by the two blue squares on

The Use of the L.M.T. in the Study of Normal Personality

the left/right diagonal, and the red diamond in the top left corner is flanked by two blue half squares. On the opposite diagonal, on the other hand, the heavy emphasis in red in the top right corner made by two equilateral triangles, is modified by placing the red in the bottom left corner as the outer diamond, while the triangle pointing towards the centre is white.

Discussion of this Pattern with the maker brought out an interesting point, since in this Pattern the maker said she had vaguely desired it to be symmetrical, and after placing the centre Pattern had continued first with the upper left corner and then with the corners of the opposite diagonal; but when she came to the bottom right corner she found she had not enough space to repeat the pattern of the upper left corner. She was not able to see how this lack of space had arisen; she therefore met the situation, as she conceived it, by a contrasted version of the blue and white group of three in the upper left corner and by placing a separate single red diamond just above this group. In general effect this Pattern is pleasing. It is in its way original and shows a certain freedom in use of the material and ability to dispose colour and form over a given space. But although the subject's ability to realise and make use of a total space is good, her grasp of form and of the essentials of geometric shape is insufficiently exact to enable her to work out for herself the reason why there was less space in one corner of an oblong tray than in another, when a Symmetrical Pattern occupied the centre. In the same way she has avoided any attempt to realise or make use of the geometrical relations of the pieces, and has adopted the device of superimposition instead. Nevertheless her sense of balance and of harmony of form and colour and her flexibility of mind are sufficiently strong to enable her to meet the situation brought about by the failure to place the Circular Pattern centrally with a new device, which actually results in an effect more pleasing than would have been the rigidity of a completely successful Pattern. An interesting comparison arises between the attitude of this subject to involuntary asymmetry and that of the maker of Plate 29 where the isosceles triangle was deliberately substituted for a scalene because the maker felt the strict uniformity to be unpleasing.

Among all collections of Patterns from normal people, particularly those of a somewhat practical and non-intellectual type, a certain number will always be found which belong to the class that has an intimate relation to the edge and area of the tray. The distinction, as

The Use of the Test

we have defined it, between this group and that of Patterns which exploit the whole area of the tray is, that in the former class a symmetrical arrangement is made which specifically makes use of the formal structure of the tray with its rectangular edges; sides which can be divided into equal parts, and so on. The vast majority of Patterns that make this shape are dull and have little to commend them beyond their accuracy and their symmetry, or occasionally a pleasing arrangement of colours. They correspond to the banal responses in the Rorschach Test. The example chosen in Plate 40, however, is an attractive variation of this commonplace type and was selected to illustrate this group (see Chapter Three) for two reasons: on the one hand the placing of the blocks of Pattern, considered as blocks, is very typical of this class, and on the other the detailed arrangement of the pieces forming each block is unusual in European responses but seems to be frequent in those from the U.S.A.

Let us now consider the structure of this Pattern. It consists of ten separate blocks of pieces arranged around the edge and in the centre of the tray. The items at the edge of the Pattern vary in the closeness of their adherence to the edge of the tray. This might be deliberate or arise through carelessness, but as the Pattern was collected in the U.S.A. by a worker with whom the writer has not had an opportunity of discussing the Pattern, this point cannot be settled. The most interesting fact about the Pattern is the oblique arrangement of the pieces, both at the corners and in the centre; this is particularly characteristic of Am-type patterns but is rarely met with in Europe. This obliqueness is carried out also in the two groups midway along the short sides of the tray, with an ingenious variation in the choice of the pieces. So far a complex symmetry is expressed in the Pattern. When we come to the centre, however, we meet a very un-European phenomenon: a group of pieces whose arrangement gives an appearance of non-symmetry, whereas it is in fact completely symmetrical. Below this comes a line of diamonds; this too is in itself symmetrical, but its position produces two blocks of Pattern in the lower central vertical diameter between the centre and the edge, and one block only in the upper. Not only is the detailed construction of the individual groups unusual, but the arrangement of colour adds greatly to the interest of the whole Pattern. In the top and bottom corners blue/white and red/yellow are alternated, so that their relationship has a diagonal symmetry, the small groups in the centre of the edge introducing two new colours: red and green. Along the sides, the centre of each group is identical and introduces a new colour, black; these are flanked by blue squares on the right and red on the left. The colours of the upper corners are repeated in the upper of the two centre pieces, and in the lower group all the colours except black and white are used.

The Use of the L.M.T. in the Study of Normal Personality

Until we are able to study a very large number of patterns collected in the U.S.A. it will be impossible to estimate the value of this type of apparent ingenuity, and to know whether it is more or less likely that a subject in the U.S.A. who sets out to make a Pattern belonging to this group will choose this colour or form arrangement.

5. DETAILED STUDY OF DESIGNS: REPRESENTATIONAL DESIGNS

In studying Representational or Conceptual designs the investigator should determine clearly :

whether there was any Representational or Conceptual intention in the subject's mind when beginning the Design;

whether the finished Design does in fact embody this intention, or whether this has been either abandoned or replaced by another idea;

whether the maker when contemplating the final effect was struck by a similarity between what he had made and some other object, and the title of this object given to it: that is to say, the Kite Reaction described in Chapter Two;

whether clear resemblance similar to that of the Kite Reaction can be seen by the tester, and if so whether these can be perceived by the maker once the Pattern is completed, although not consciously present to him during the making of his pattern. (Anthropoid Patterns are those which most usually fit into this latter description.)

In comparison with collections made in the U.S.A., Representational Designs occur relatively infrequently among the responses of European adults and Figures 3 and 4 represent the high watermark of skill so far collected. As it is unlikely that designs of this quality will be of frequent occurrence we will instead take for analysis, as more usual types of Representational Designs, Plate 100 and Plate 7, in order to demonstrate the method of analysis.

Example five. Plate 100 was made by a young adult English University woman after completion of her degree, and represents a house, the ground and three trees. This would be classified as a Representational Design which exploits the whole area of the tray, sub-group: Scene.

In the analysis of Representational Designs the factor of content adds an additional element to the procedure of analysis. It is wise however

The Use of the Test

to start the analysis of the Design itself by ignoring the content and noting the same features as are dealt with in the analysis of Abstract Patterns.

The pieces of this design are used in a direct and simple way, each piece being given its full value and used separately except in the roof and chimney. Combinations of pieces where they occur are also of the simplest type.

The colour is clear, unambiguous and partly naturalistic. The disposition of the black builds the Design together and produces an effect of encirclement of the house. The general placing of the units of the scene shows an appreciation of the elements of design and has a decorative effect.

From the point of view of content, the scene is of a house and two trees, the house being completely dwarfed and overshadowed by the height of the trees, emphasised by the use of black instead of green for trees and ground. The green squares at the base of the trees suggest pots out of which the trees grow, giving them a temporary rather than a permanent character. In contrast to the house, where the outline is realistic, the form of the trees is schematic (as will be obvious if the trees in this Design are compared with those in Plate 12 and Plate 129). We have therefore a very simple house, in which only the roof and chimney are realistically carried out, surrounded by trees schematically presented. It is interesting that no door or window is indicated in the house. As the interpretation of Representational Designs is much more closely bound up with the content of the Design than in the case of Abstract Patterns, we will proceed immediately to the interpretation of this Design.

Interpretation The interpretation of Representational Designs inevitably follows that of the accepted interpretation of drawings and paintings. In these by common consent a house is a symbol for femininity or the feminine personality. The house in this Design therefore represents a feminine personality that is enormously overshadowed by certain environmental factors which, by introjection, she feels within herself. The use of the same colour for the trees as for the ground on which the house stands suggests that these three elements belong together and represent the most fundamental element of environment: the family. The interpretation of this Design would therefore be that

The Use of the L.M.T. in the Study of Normal Personality

its maker was a simple rather than a complex personality, feminine in type, much overshadowed by family factors. The general arrangement of the Design however suggests also a sensitiveness to design in its usual sense. Here is a personality with promise as yet undeveloped.

The actual history of this subject is as follows. She was the fifth child in a family of three sons and three daughters of a Scottish land-owning family. Her father was a humorous, kindly professional man, very conventional in outlook and a pillar of the Church. Her English mother, who came from a closely-knit family in the south, was very tall, kindly and dominant, conventional in outlook and inclined to put family interest before all else. Owing to a strained financial situation it was considered impossible for provision to be made for the education and social equipment of all the members of the family, and all educational and other privileges were therefore concentrated upon the boys; the girls had to make what they could out of what was left over. The pattern of living for the family was firmly and definitely set by the elder members; emotional expression of any kind was definitely discouraged and the younger members were expected to conform to the general opinions and attitudes of the family. The maker of this Design succeeded outwardly in breaking away from her family, but subjectively their opinions still dominated her, and she remained tied to them by strong bonds of affection. As a career she took up drama, and after marriage lectured on this subject.

Plate 7 was made by a citizen of one of the smaller European countries who held successfully an administrative position in an international organisation. It presents four flowers arising from a decorative ground. This Pattern has been chosen for comparison with the previous one because of an apparent similar simplicity in the use of the materials of the test that is in fact misleading. It is also a Representational Design that exploits the whole area of the tray; sub-group: Flowers.

In this design the apparent simplicity of the use of the pieces is deceptive. The Design consists of four flowers set on stalks which arise from the lower edge of the tray. A square is set midway between each adjacent stalk. Each shape in the box has been used to form one of the elements in the Design, and, simple as the resulting form is, there is considerable ingenuity in their use. Ingenuity in the adaptation of means to ends occurs also in the construction of the stalks. We have therefore an ingenious construction which shows under its apparent simplicity, considerable subtlety of thought. Among the four flower

The Use of the Test

heads, the diamond star is the only Conventional Pattern; the flowers formed of scalenes and half squares are placed side by side and the pieces used to produce a Whirling effect; the equilateral triangles arranged in a solid maltese cross not a little reminiscent of the Iron Cross, balance on the left, the regularity of the star on the right. When the Design is viewed as a whole, we see that all the colours are used, but white appears only once in the right hand square. The arrangement of the colours show a sensitiveness to composition, the red flower diagonally balancing the red square and the yellow flower the yellow square, with the black flower and square on the left balancing the big blue flower on the right. Each colour in the box is represented in the squares, which are placed with a nice sense of composition so as to use the available space without too much rigidity, as is shown in the fitting of the left hand red square to the corner but not of the right hand white square to its corner.

This then, is in reality a highly sophisticated and ingenious design deliberately exploiting an apparent simplicity to conceal subtlety and ingenuity. Although it is commonly found that Flower Designs are made by women, the subject of this design was a man who was outwardly aggressively masculine and who was contemptuous of the possibility that insight into character could be given by anything in the nature of the L.M.T. This choice of theme and mode of presentation therefore suggests a deliberate construction of something as far removed as possible from the subject's apparent personality. On the other hand, the design does in fact reveal a great deal more than the content hides.

The facts of the subject's life were as follows. He was a national of one of the smaller European countries who had run away from home to join the army, and had fought in both main and guerilla actions on several fronts. Guerilla actions and independence and initiative appealed so strongly to him that he not only changed his occupation on several occasions, but even succeeded once or twice in changing his nationality. At the time the response was made he was carrying out, with conspicuous ability, a branch of international administration which demanded a full measure of charm, quickness of thought, ingenuity and adjustability, and an ability to find unusual means for meeting unexpected demands. Though charming on the surface, he could be completely ruthless in personal or emotional relationships.

Thus, judging by the Design itself, the subject would be of a nature to enjoy the use of apparent simplicity and innocuousness to hide unusual dexterity in the manipulation of material circumstances, able

The Use of the L.M.T. in the Study of Normal Personality

to think on several planes at once and to conceal detailed skill beneath an appearance of simplicity.

6. DETAILED STUDY OF DESIGNS: CONCEPTUAL DESIGNS

As explained in Chapter Two, there are three kinds of Conceptual Designs of which Plates 18, 19 and 20 are examples.

The type of Pattern represented by Plate 18 is made essentially by individuals the centre of whose personality is the life of abstract ideas. These are people for whom form as such, and without an ideational content, has little interest, and for whom colour rarely stands in its own right but is chosen usually for its associations. Plate 18 presents three groups of pieces in which all the shapes and all the colours are used, and which are said by the maker to represent the complex idea of *order and disorder, harmony and disharmony*, though the relation between these ideas and the Design is very obscure.

The pieces are combined in an intermediate manner. A characteristic of the Pattern is the insecurity of its base and the rigidity of the portions (column of three red squares and white and black central triangle) said to represent Order. Disorder, on the other hand, is represented by a white equilateral triangle insecurely balanced on two scalenes and a red equilateral triangle between two scalenes. Harmony is represented by a regular arrangement of pieces touching at their points as if on a necklace, and Disharmony by an approximately equal number of pieces arranged as a linear slab.

The general configuration of this Design suggests a purely intellectual approach without aesthetic ability or philosophic training, with feelings subordinated to thought.

In actual life the maker of Plate 18 was a German professional man forced to flee from his country in tragic circumstances and attempting to recreate his life in a new country.

In contrast with the first type, Conceptual Patterns which are built up out of representations of objects, as in Plate 19, are made by people of a much simpler unsophisticated type with a more direct relation to objects. A great deal of information concerning the subject, his life, his ideas, his affective attitudes, his present situation, will emerge through discussion with a subject who makes this type of Design, of the items of the Pattern itself. These are not imaginative people and

The Use of the Test

have little manipulative skill and in this they form a strong contrast to makers of the third type of Conceptual Designs illustrated in Plate 19. The maker of Plate 19 was a soldier of an absolutely characteristic army type who had been demobilised and who was finding adjustment to civilian life very difficult. Unfortunately at the time this Design was collected, insufficient collateral evidence was available to enable assessment to be made of his potentialities as an individual. From the Pattern a state of depression is evident, combined with very mediocre perceptual and manipulative abilities and a conventional form of imagery. The position of the chain between the regimental badge and the cemetery cross, and the choice of a chain as a symbol, expresses a deep resentment against having been compelled to remain in the army with its rigid discipline. Forced inclusion in a life he detested is represented by him in a Design with obvious neurotic characteristics.

Conceptual Designs of this class presuppose in the maker a number of highly specialised qualities. These are made by people who think symbolically, but the symbols are concrete, in contradistinction to conceptions of the first type which are highly abstract, and carry a many-faceted meaning. A sense of design in the literal sense of the word is essential for the formation of such a response, together with an interest in the simplification of complex ideas for direct presentation.

Conceptual Designs of the third class, illustrated in Plate 20, are very rare and their interest is considerable.

The maker of Plate 20 was a young English woman who applied for entrance to the Sociological Department of a Northern University. It will be clear from what has already been said that the possibilities of Designs made by normal subjects, both in the way of construction and of colour, are as manifold as the varieties of personality itself. Indeed, after an experience of some twenty years in the constant collection of Mosaic Designs, it still happens that any new collection of responses by normal subjects will infallibly contain Designs that show new possibilities of content and construction. If the basis of the L.M.T. is sound, this is what might be expected, and reflects the experience of anyone who, when in control of other men and women, has had to make correct judgments concerning the probable modes of feeling and reaction of those under his direction.

The Use of the L.M.T. in the Study of Normal Personality

The innocent appearance of the test itself induces spontaneity in response; and, when accurately analysed, the results of these responses should reflect, in essentials, the actual spontaneous reaction of the individuals to the circumstances of their lives.

In the previous pages we have considered the mode of analysis of types of Designs to which parallel examples will be found in most collections of responses from European subjects. One further element remains to be considered: the occurrence, among the responses of normal people, of designs which are in a special sense a self-portrait of the maker.

In the Introduction it has been explained how responses to the test can be made from different levels of the personality. When a creative moment arises, Designs of astonishing vividness can occur, such as Plate 128 described by Dr Ellenberger in Chapter Nine.

7. A DESIGN AS A SELF PORTRAIT

Example six We will take as an example for analysis the Pattern given in Chapter Three as an illustration of a Growing type (see Plate 30).

Although this is an Abstract Pattern, and was seen and described as such by its maker, it produces in the spectator the effect of a kind of shrine-like monument at the top of a flight of steps.

Considered analytically there are two main elements in the pattern: a vertical rectangular element consisting of a structured centre with two flanking columns, and a series of three horizontal strips of which the lower is, in each case, wider than the one immediately above. The centre of the vertical half is carried out with the simplest material but with considerable effect. The cross-section (blue) with the half square (red) in the centre has the effect of an architrave, and is constructed with skill. The two yellow columns, one on either side of the centre, being taller than the central square but considerably shorter than the central blue structure, give the effect either of architectural supporting columns or of the open panels of a triptych. In contrast to this vertical element the three horizontal lines are so constructed that the points of the outermost diamonds of each row project beyond the one below, producing the effect of steps mounting upwards. The increase in length of each successive horizontal parallel is brought about by an intelligent use of half squares; and the fact that the base of the half square is longer than the side of the diamond accounts for the projection of each row beyond the one below.

Looked at from the point of view of colour, this is a very curious pattern. The sombre effect of the two black columns with the blue architrave above

The Use of the Test

throws the red pillar into strong relief and gives a phallic appearance to the red column. At the same time, taken in conjunction with the yellow columns, the suggestion of a triptych with open panels is conveyed; this is supported by the relative heights of the various columns. The use of green and yellow in the two upper horizontal strips with black and white in the lowest strip add to the suggestion of steps leading to a shrine. From the point of view of the Design taken purely as a Pattern, there is a marked difference and considerable imbalance between the two parts of the Pattern, the upper part being quite different in character from the lower; it is tightly constructed and perfectly fitted together in the centre; the vivid red column and the outer partial frame of yellow, with the repetition of black, combined with white in the lowest line, completing the effect of an architecturally constructed presentation.

The implicit significance of the Pattern indicates a complex personality with great energy, balanced and opposed by moods of depression, but probably, as the yellow pillars suggest, with an outward aspect of cheerfulness. The Pattern suggests a strong religious feeling (though no hint is given of its nature), and a habitual association with being on or approaching a platform in a hieratical function. It suggests a man of force and distinction, with a feeling for traditional or ritualistic forms of living. There is nevertheless a certain simplicity in the pieces chosen and in their mode of employment which is curiously at variance with other qualities of the Pattern. The double significance of the central red column, both as a phallic symbol and as the centre of a shrine is also striking.

One would expect an individual who made such a pattern to be an outstanding personality in whatever sphere he worked: to be either a priest, an actor, a scholastic or civic dignitary with strongly conflicting strands in his character; simple in certain aspects, astute in others, cherishing masculinity and according it a high value and yet shutting this away in moods of depression and gloom.

In real life the maker of this pattern was an outstanding and original pioneer Headmaster of an unusual and very successful type of boy's school that combined tradition and freedom, a profoundly religious atmosphere and unusual liberality of outlook. As a Headmaster he was a man of great originality and drive, combining an ability to initiate and carry through daring innovations in education with the sound judgment of a good educationalist. One of the aims of his school was the combination of simple activities with opportunities for self expression for his boys. There was more than a little of the

The Use of the L.M.T. in the Study of Normal Personality

showman in him, and his untimely death during the war was not unconnected with his efforts to maintain a standard of dignity and culture for his school in conditions which actively militated against it. As a man he was an eccentric, given to marked swings of mood; unmarried, excitable, convivial and musical, with a sarcastic tongue and on occasions a mordant wit; a man with profound religious convictions of a ritualistic type who saw himself, as he expressed it in his mosaic, always on a platform either displaying, defending or advocating. In as far as a single creation is able to do so his Mosaic Pattern expressed his essential nature.

8. CLASSIFICATION OF DEDUCTIONS IN RESPECT OF THE L.M.T. AND NORMAL PERSONALITY

To summarise therefore the main aspects of personality that can be deduced from careful analysis of the response to the L.M.T. of a normal individual; these are as follows:

(i) The general integration of the personality

Within the limits of a general text book such as this, it is only by comparison with the chapter on the use of the L.M.T. in the study of neurosis that this factor can be appreciated. The evaluation of the factor of integration in any Design, whether Representational or Abstract, is not at all simple, since so many factors are involved; but, as the examples about to be given will demonstrate, it is in regard to this factor in personality that the most reliable information can be given by the L.M.T.

(ii) Presence or absence of anxiety

Correlative with the first point, responses to the L.M.T. reveal with considerable reliability the presence or absence of anxiety in the subject. In what features of a response the presence of anxiety is most commonly shown will be considered in the following chapter.

(iii) General level of intelligence and of constructive ability

It is very difficult in a book concerned with general principles to explain the manner in which the factor of intelligence is shown in a response to the L.M.T., and a considerable experience of the test with

The Use of the Test

many types of people is necessary before a sound assessment of this factor is possible. Once a large number of responses from well balanced individuals of markedly different intellectual levels has been seen, the definiteness of the contrasts between them in inventive and constructive aspects will become obvious. The possibility, however, of a neurotic element, unsuspected either by the subject or his environment, may well confuse the issue and give rise to a result which, in appearance, will be far below the proper level for the inherent ability of the maker. Great care should therefore be taken for this reason in the evaluation of Designs from apparently normal individuals in respect of the factor of intelligence, and it is wise to supplement analysis of the response with enquiry into such aspects of the subject's history as would enable the tester to make a rough estimate of the probable intellectual level of the subject. For example, supposing the Design to take the form of a very simple Abstract Pattern and enquiry into the history of the maker should reveal the possession of a University degree, it would be clear that the Design in itself did not represent the real ability of the subject, but that some interfering factor was present.

(iv) Degree of originality or of conventionality

Once again this is a point which becomes obvious with extended knowledge of responses to the test and is impossible to describe. It is in order to assist testers to sort out the original from the conventional that so much space has been given in Chapters Two, Three and Four to the grouping of typical Designs into standard types. Once a Tester has become familiar with these, correct assessment of the factor of originality or conventionality becomes almost automatic.

(v) Presence or absence in the personality of a number of definite qualities

Qualities such as accuracy, sense of order and balance, ability to plan and to carry out a project spontaneously conceived, speed of thinking etc, can be deduced from most Designs of normal people.

The L.M.T. gives exceptional opportunities to observe the manner in which a practical task is approached by the subject. His speed of thinking, power of decision and so on are aptly demonstrated in his reactions to the difficulties of the task as they appear.

The Use of the L.M.T. in the Study of Normal Personality

(vi) Artistic interests and abilities

Correlatively with the last point comes the question of artistic ability and interest in colour and form. As has been pointed out before, there is an immense range of possible shades of interest and ability in responses to the test not merely in fantasy but in relation to real material. The limitations of the materials of the test in respect of artistic productions have been discussed in previous chapters. To some artists these limitations are in themselves a stimulus and the interaction between them and latent ability in ordinary people can produce results of distinction (see Plate 16).

(vii) Ingenuity and dexterity in manipulation

This is a quality which comes out very clearly in the L.M.T. and which during the 1939-45 war was made use of for selection of operatives in a light engineering industry.

(viii) Accuracy in perception of external reality

It is a constant astonishment to many workers with the L.M.T. to find the range of difference in the perception of external reality in normal people which response to the L.M.T. will bring to light. Certain people, like the subject of Plate 99, see a situation but are not able to see through what factors it has come about; others set about Designs that are obviously impossible of realisation with the materials of the L.M.T. and spend long periods attempting to achieve the unachievable; others, like the maker of the Fox and Rhinoceros, have an almost uncanny perception of form and an ability to reproduce their perceptions.

(ix) Possession of a sense of humour

It is a pity that only one example of a humorous response (see Plate 6) can be given, but in a collection of responses from normal people the most delightful humorous Representational Designs occur.

(x) Presence or absence of obsessional traits

The presence or absence of obsessional tendencies can be very clearly detected through observation of the procedure of a subject making a response to the L.M.T. To a mild degree, many normal subjects will show this characteristic. The factual difficulties of using the pieces successfully inevitably produce reactions in subjects which will bring into expression these tendencies if they are, in fact, present.

The Use of the Test

(xi) Energy or its lack

With adequate experience of responses, one of the qualities of personality which comes out clearly is the question of the general energy of the personality. This is again difficult to describe; but a comparison between Figure 14 and Figure 4 and between Plate 46 and Plate 24 will perhaps make this clear.

(xii) General strength or weakness of the personality

This is a different point from the foregoing, as a personality can be highly charged with energy and yet deficient in ability to control or organise its expression. What the L.M.T. can show however is the general solidity and strength, or on the contrary, the ineffectiveness and weakness, of the personality.

(xiii) Outgoing tendency in the personality (Extratensive or the reverse)

Once again this is difficult to describe, or within our limits to illustrate, but it is within the power of the test to demonstrate it.

(xiv) Ability to accept limitations and to make the most of what is available

A certain number of subjects start out with the intention of making something which it is impossible to produce with the materials of the test. A revealing moment occurs when this fact becomes obvious to the subject. The question then arises whether he will be able to accept these limitations and modify his aim to something that can be realised with the materials; or whether he will give up the attempt altogether and produce instead some simple banal Pattern; or whether, after further experimenting with the possibilities of the materials, he is capable of producing a design which may be of the same relative complexity as his original but of another type; or whether he will override the limits of the tray.

9. THE USE OF THE L.M.T. IN THE STUDY OF SPECIALISED PROBLEMS

(i) The question of personal stability

It has been said above that it is possible by means of the L.M.T. to detect in the responses of normal people the presence of elements of

The Use of the L.M.T. in the Study of Normal Personality

strain. The next three examples have been selected to examine and illustrate this point. These three Patterns, together with Plate 98, form the four patterns referred to on page 173 as presenting personalities in which two different elements are dominant.

Plates 101 and 102 are Patterns by English women, who belonged generally speaking to the same social class, and were of comparable intelligence and culture. The third (Plate 103) is the Pattern of a young woman of twenty-nine just setting out to achieve a professional life.

Example seven (see Plate 101). This is the Design of a middle-aged English woman living in a small industrial town. The Design is a Centralised, Intermediate, Successful, Abstract Pattern with Recurring Form, symmetrical in form and colour about an oblique axis. It is roughly a tilted oval in shape with a line going through it from upper left to lower right, rather like a spindle. At the end of the spindle there are outbursts of red.

Critical examination shows that it consists of two quite different halves: a central spindle which projects beyond the oval at either end, and two exactly similar halves placed one at either side, as if driving in to crush the central core. The centre portion is built about a square against the sides of which half squares are placed in a Whirling form. This movement comes to an end against static outer triangles; and the whole is held in place, and as it were crushed between, the solidly constructed side portions. An interesting feature of this inner portion is the way in which the three armed extra pieces fit into a space between two scalenes, and the extending arms on either side of the gap between the outer triangular elements as it were pin the whole structure together. In contrast to the centre portion, the side halves are massively constructed of large triangles, from the outer edge of which at either side springs a flourish of two scalenes and a diamond. Were the two green and yellow pinning arms not there, this would be a Winged Pattern; for the centre portion could then be slid out of the Pattern and the two side halves be brought together to compose an Oval Symmetrical Pattern. Structurally therefore this is a potentially Winged Pattern which is prevented from becoming so by the space round the centre of the Pattern and the pinning of the three elements together.

The distribution of colour in this Pattern is most striking. Green, yellow and blue form the central portion, each being so interspersed with the others as to avoid any massing of colour, while the yellow lightens the effect of the pinning arms at either side. In the other two elements of the Pattern, on the other hand, strong contrasts in colour are used with vivid effect. There is a line of white on either side forming the outer edge to the central Pattern, with one single red triangle to connect the outer and inner part of this portion. This carries at its tip an inverted red triangle, flanked by black on either side, its outer edge forming a base for an outburst of red.

The Use of the Test

This is the Pattern of an individual whose personality, like the structure of her present life and circumstances, is composed of two halves which have nothing in common. It is a personality with emotional force (the red flames) and practical ability (the competent construction of the central portion); the force, however, does not derive from the centre of her present personality, but is in a strange way at the circumference of it – in fact only at a part of the circumference. That strange part of human personality which is aware of its interior structure has, however, so constructed this Pattern that brackets are fixed into the central structure extending to right and left of it, holding it all together. It is noteworthy that these brackets arise from the central portion.

This Pattern indicates that it is made by an individual in whom two entirely different types of work and experience are operative: one central to her normal life, one peripheral; but that it is from the central portion that aspects of the personality arise which bind the whole together.

There is, however, another aspect from which the centre can be regarded, and that is its irregularity and imbalance. Supposing the brackets were to be removed, or thought of as flying over rather than holding together the outer portions, then the whole Pattern would fall to pieces.

This is the Pattern therefore of a woman in whom two absolutely distinct elements of personality are at variance with one another, but which she has succeeded in combining into a functional whole. The remarkable thing about the Pattern is the great dissimilarity of the parts and the fiery tongues which leap from the outer rim of the side portions of the Pattern. Such an arrangement of colour and shape suggests that the central, practical, aspect of the personality is lightly balanced, associated with the impersonal colours of green (nature), blue (sky), yellow (sunlight), but with a complex structure. The outer portions on the other hand suggest something fiery, full of contrasts, so much at variance with the centre that it cannot combine with it at any point. Such an element might be a devotion to self expression in art, or a fiery type of religion, or an emotional relationship associated with either, but would be something that did not spring from the core of the personality.

In actual life the maker of this Pattern was the eldest child of a

The Use of the L.M.T. in the Study of Normal Personality

family of three (the other two children being younger brothers), members of a united family of business people living in a small midland town. Our subject was by far the most intelligent and capable member of the family, and was trained for a musical career; but during the First World War the family business suffered so badly that after the war she had to give up all idea of music, enter the family business and set to work to build it up again. Her great energy and ability enabled her not only to succeed in doing this, but also to continue for a time to exercise her musical abilities and later to undertake the organisation of musical activities in her neighbourhood. She is a woman of great energy, with wide civic interests and undertakings, many friends, and a sure place in a society far wider than that of her family or her original *milieu*. She has, in fact, succeeded in combining the elements of music, business and organising ability, in a single personality and in making a conspicuously good adjustment to the social possibilities which her qualities make accessible to her.

Example eight (Plate 102). To compare with this we shall take another Pattern made by a young married woman from somewhat the same social background.

This is an Abstract Pattern of the Collective type (i.e. consisting of two or more Patterns which are considered by the maker to be separate Patterns).

On the right side of the tray she placed a fundamental star to which a radiating ring of white diamonds was added, the points of which fit into the outer angles of the star. The colours of the star are alternating black and green. The whole makes a pleasing effect. On the left of the tray she placed a Pattern of about the same size but of an entirely different character. Here, on a base of three squares a vertical oblong block is arranged, with an inverted V at the top which is compactly constructed of diamonds, with a single red square in the centre towards the top. The diamonds are used in a primitive ribbon manner and the colours are red, yellow, blue and (some) green, disposed symmetrically. Here we have, therefore, two Abstract Patterns completely different in type. The left hand one, made first, analyses structurally into an erect column seen in perspective, with a red top enclosed in a cover, all of which stands on a base of squares. The colour is unpleasing, the construction primitive, and the general effect masculine. But the right hand Pattern, made next, has the form of a rosette, free in the space, Flower-like in shape, with a weak surrounding ring suggestive of white flower petals. The form of this is feminine and dainty.

The marked difference between these two Patterns suggest a nature

The Use of the Test

that has failed to harmonise its fundamental antitheses, and gives a bad prognosis for the subject. Taken as a whole the Collective Pattern indicates a personality whose outward appearance (the second Pattern) is feminine and dainty, but whose inner nature is opposite in type. With so basic a disharmony within the personality it is probable that under stress a breakdown of adaptation would occur and that this might be sufficiently severe to mirror itself in a psychosis.

When we compare this interpretation with the events of the subject's life, the following facts come to light. The subject was the middle one of three children of a north country legal family with very definite and dignified attitudes to life expressed by dominant parents. One daughter was a musician, and the subject herself had a beautiful speaking voice. During her first thirty years she presented the appearance of an attractive, well balanced and successful young woman. She took up acting and stage management and married an actor. The birth of her first baby, however, precipitated a period of stress, and she broke down with puerperal insanity characterised by violent hostility to her mother. She recovered from this incident and resumed her normal life, but in later life had two further mental breakdowns -- in each case associated with periods of family stress.

Example nine (Plate 103) was made by a young woman on a visit to the capital city of a country whose language was the same as her own. It is an Intermediate, Centralised, Unsuccessful Pattern with Recurring Form: sub-group, Oblong.

This Pattern consists of three parts: a central core of red and black, and two sides. Were it not for the two green half squares and two yellow scalenes which touch each other at top and bottom of the Pattern, it would be a winged Pattern and its significance clear. These four pieces however prevent the withdrawal of the centre strip and so keep the Pattern for the moment integrated. Starting from the top and moving down the general ground plan of the Pattern is a contrasting use of black and white with equilateral triangles and scalenes. Below this come two diamonds on either side with a third projecting from it; and below this again an arrangement consisting of an equilateral triangle flanked by two scalenes with a pair of scalenes arranged against its outer side. Here, however, a mistake has been made on the right, the scalenes being turned the wrong way round. At the lower end of the Pattern a pair of upright equilateral triangles have a pair of scalenes on their outer side, but the arrangement of the pairs is different. Between this group and the middle one a single diamond is placed.

The Use of the L.M.T. in the Study of Normal Personality

It was the intention of the maker to make an amusing distribution of colour, and the differences between the two sides are deliberate, the black diamond projecting from the top right side being repeated diagonally by the black diamond at the lower left side and the same with the pair of yellow diamonds. The colour in the pairs of scalenes is reversed, giving a pleasant effect. What is ominous, however, is the strength and integration of the black and red core and the way in which it splits the Pattern into two halves.

In the construction of this Pattern there is a certain grace and freedom in the use of the materials (always excepting the centre). In idea the Pattern is freely arranged and shows a certain capacity to plan, particularly in the use of the equilateral triangles. On the other hand there are several errors either in perception of the shape of the scalenes or in willingness or power to attend to detail. But the really ominous element is the contrast between the conventionality of the centre strip with its integration and strength, and the loose construction of the outer portions. The same qualities appear in the colour.

At the top the Pattern starts off with an artistic balancing of white and black, but the choice of two black triangles (instead of a repetition of diagonally arranged white/black) very nearly joins these two to the centre strip, giving the appearance of a broadly based spike thrusting up through the centre of the Pattern. The combination of black and red in this central element also suggests a cyclothymic element, disturbing the freedom and gaiety of the rest of the Pattern.

In real life the maker of this Pattern was gay and enterprising, pleased with life and with the opportunities offered her by life in the new capital, confident of her powers, and able to make good contacts with the new circle among which she found herself. At the time the Pattern was made she was still a visitor enjoying escape from difficult circumstances at home. But four months after the Pattern was made, signs of emotional disturbance began to appear, an acute conflict developed with unmistakable cyclothymic characteristics. She passed into a state of severe neurosis leading to depression, which necessitated consultation with a psychiatrist.

- In this case, therefore, as in that of the maker of Plate 102, the response of the subject to the L.M.T. brought out evidence of a profound, but at the time hidden, interior conflict, which later was to disrupt entirely the life and work of the subject.

This ability of the test to bring out underlying conditions of stress which, though quite unexpected at the time of making the response to

The Use of the Test

the L.M.T., yet threaten the whole welfare of the subject, is one of the great values of the test. Conditions unsuspected either by the subject or by those who are most intimately in contact with them can be expressed in a response to the L.M.T. at a time when, with adequate understanding and attention, a breakdown which would be otherwise inevitable, can be prevented.

(ii) The adaptation of personality to professional work

Not only is the L.M.T. of use in the work of vocational guidance but also it can assist employers to assess the suitability of employees for posts involving the exercise of specific abilities. With tactful handling of the situation, since the test is objective and the interpretation can be evaluated by the subject himself, it is possible to bring home to a worker that he is or is not suitable for a given type of work.

The following is a brief example of the use of the L.M.T. on such an occasion.

Example ten (Plate 104). This is an Abstract, Compact, Successful Pattern, symmetrical in colour and form, sub-group: Growing.

It consists of a thin central column which arises from a horizontal base. Except for two scalenes, only diamonds are employed in the execution of the Pattern, and these are used in the simplest and most obvious way. While the upright portion fits securely into the horizontal bar, there is a wide angle in the lower edge of this bar and an oblique upward slant to its ends which make it a somewhat insecure base, but one whose defect cannot be remedied. It did not occur to the maker to vary his choice of pieces in order to construct a horizontal ground which would stand firmly on its lower edge. In the same way the junction of the upright and horizontal arms is effected through the use of two scalenes; but the maker here abandons the principle used in the rest of the Pattern, of exactly fitting together single pieces, and chooses two pieces whose lengths do not correspond to those of the pieces against which they rest.

In his use of colour the same characteristics appear. Yellow and white, the weakest of the colours, are selected for the base, with white as the lowest line. At the junction of the upright and the horizontal bar is a black piece flanked above and below by white. The apex of the upright is again black, and what red there is in the Pattern is partially concealed.

This Pattern reflects an upright, ambitious but impulsive personality, fairly well integrated (since constructionally considered the Pattern holds together), but lacking in force and solidity and with a relatively insecure base. Rigidity and limitation of thought and out-

The Use of the L.M.T. in the Study of Normal Personality

look are prominent characteristics; and the black apex pinning back (as it were) a red piece suggests lack of self confidence and distrust of feeling. Taking the characteristics as a whole this is an honest man of limited ability, rigid and unspontaneous, though possibly impulsive, insecurely based and lacking in self confidence.

In real life this subject was an ambitious man working in industry, in early middle life, intelligent, volatile and impulsive, eager in attending classes for evening education where he would take an active and intelligent part in discussion but would not do any real work between lectures. He had taken his Managers' Certificate and felt aggrieved that he did not get a managerial post. Discussion of his Pattern with the tester confronted him for the first time with the possibility that perhaps his inherent qualities were more fitted for the job he held than for that for which he longed.

Example eleven (Figure 14). The second example is a study in character of a professional man. It is a successful Representational Design

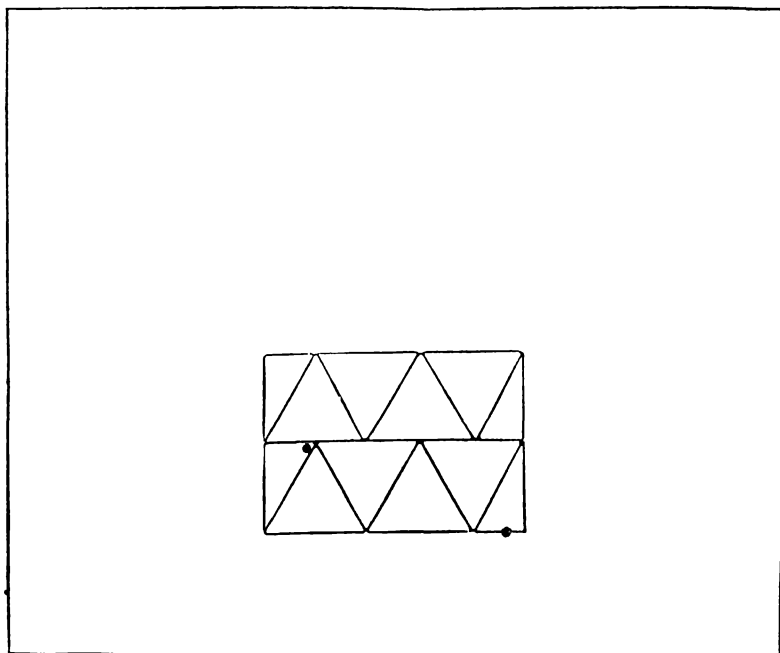


Figure 14: Ice cream sandwich

The Use of the Test

placed in the centre of the tray and said by the maker to represent an ice-cream sandwich. Simple as this design is, it does not lack definiteness. White is rarely used in Britain (though much more frequently in the U.S.A.), and looked at carefully this white block is not so naive as it seems at first glance. The outer shape is finished neatly and the placing of the sandwich a little below the centre of the tray, as if on a plate, is also appropriate.

The design suggests a simple, cheerful, direct nature to whom the obvious occurs spontaneously, but who has self confidence enough to make so ingenuous an approach. The subject is probably a good mixer (eating an ice cream sandwich is rarely a solitary occupation), with simple and spontaneous contacts with people and unaffected pleasure in straightforward gustatory delights.

In real life the maker was a young Church of England clergyman in a small Midland town. He was happy in his work, had a cheerful disposition and a friendly and ingenuous attitude to life, made easy social contacts with his parishioners; was of medium ability, and quite without ambition.

(iii) The study of the family

It is also possible to obtain valuable information about family relations by the use of the test. *Examples twelve and thirteen* and Plates 105 and 106 illustrate such a possibility.

These two Designs were made by two adult women, sisters who were not twins but very devoted to each other. Neither sister saw the Design of the other, and one Design was made four years before the other one. Nevertheless if we study these Designs we see a remarkable similarity between them. Both are realistic representations of a flower (said in each case to be a tulip) on a green stalk arising from a white container and with a horizontal line drawn somewhere across the direction of the flowers. In one design (see Plate 105) there is a single large centralised flower, red and yellow in colour, growing from a natural stem with two leaves. A horizontal black line cuts across the tray at the base of the leaves, with a white container below. The Design in Plate 106 has two flowers, one red and one yellow, each smaller than those in the former Design, growing from a short unsatisfactory stem which rises from a large and clumsy white vase. Along the base runs a horizontal blue line.

The Use of the L.M.T. in the Study of Normal Personality

The second is a far less satisfactory Design than the first: the vase is out of proportion and occupies the major part of the picture; the stems of the flowers are stunted and the general impression is in comparison somewhat flat and dull.

The life story of the two sisters is as follows. The maker of the first Design became a teacher and married. The marriage turned out badly and a divorce was obtained. This was an immense relief to her, and she felt that after it was completed she blossomed out in a way that had never been possible before. In her native language there is an idiom which uses the idea of a 'line through life', and looking at her Design we see that this is what she felt she had represented. Her black diamonds stood for this 'line', the white diamonds for the dreary earlier years, and the cheerful, well constructed flower with its combination of red and yellow for the happiness of her life following her divorce.

The other sister became a dressmaker and also married. Her marriage too turned out unhappily. But, unlike her sister, she was unable to find a decisive solution for her difficulties, and went on living unhappily in her ambiguous situation. In her Design the main space is occupied by a dead white block of pieces representing not something living but an inanimate container. Out of this come two flowers on stunted stems, one red and one yellow. At the base of the design is a blue line, and even this is hidden in the centre by the white container. In contrast to her sister's Design, this represents her life as being mainly a flat and uninteresting 'white' emptiness – something which might contain value but does not do so. In the two flowers she uses the same colouring as her sister but each colour is separate, and the stems have been cut off shortly below the flower. There is a potential base to her life but it is obliterated in the centre by a blank white vase.

It would be pleasant to cite many other varieties of Designs made by normal people, but neither space nor the limited number of illustrations permits, and we must leave this aspect of the subject with the hope that sufficient detail has been given to make clear the general lines of study in the responses of normal people to the L.M.T.

CHAPTER EIGHT

THE USE OF THE L.M.T. IN THE STUDY OF NEUROSIS

Illustrations referred to in this chapter in the order in which they occur :

Plates 37, 107, 108, 124, 39, 109, 110, 17, 62, 111, 38, 64, 31, 33, 113, 112, 6,
4, 11, 16, 12, 13, 120, 14, 114, 18, 19, 20, 121, 35, 48, 122, 47, 43, 123, 30, 32,
23, 24, 115, 86, 87, 88, 89, 90, 91, 92, 93, 94, 116, 117, 118, 119.

Figures in text : 8, 7.

1. NEUROTIC MANIFESTATIONS IN RESPONSES

Having now gained some familiarity with the mode of analysis of normal people and having a framework of understanding of the mode of development of responses to the test at successive ages, we can consider the relation of the test to the study of neurosis.

It has been said that all civilised human beings are to some extent neurotic, and it is unlikely that any definition of neurosis could be put forward that would meet with general agreement. It will perhaps, therefore, make the relation of the test to the study of neurosis easier to understand if we start the other way round and consider what are the reactions to the test which most clearly bear the marks of neurosis in the subject. These are as follows:

(i) Misinterpretation of the Instructions

It might be thought that the Instructions given by the tester to the subject in relation to his response are so straightforward that no misunderstanding is possible. But this is not at all the case. For example, subjects often respond with such questions as 'Must I fill the whole tray?', showing a certain amount of anxiety; or they misunderstand in other ways.

Plate 37 may be taken as an illustration. In this response we have a Frame Pattern which was made under the following circumstances.

The Use of the L.M.T. in the Study of Neurosis

A girl of seventeen, the elder of two children of a professional family living in a Commonwealth country, was sent to England for additional schooling, and to see if help could be obtained for her personal difficulties. She was a nice looking, well dressed, well developed girl with a few skin blemishes on her face and a sullen expression. Her history was one of emotional difficulties between herself and her parents, who were intensely devoted to and absorbed in her young brother but indifferent to her. Although of good average intelligence, at school she had failed to keep her place in class and was very backward in school work. She had found it impossible to make friends, was moody, sullen and unco-operative, apt to see imaginary slights and react to them violently, and to show very poor judgement in practical matters.

When presented with the L.M.T. and while the Instructions were being given her, she screwed up her eyes and stared fixedly at the box and tray as if they presented problems of great urgency and complexity. This was her first interview with the psychiatrist and there was a vibrating atmosphere of hostility and suspicion. In order to get a spontaneous response, the psychiatrist withdrew and watched her from some distance.

She started by placing the black square in the left hand top corner and working with alternate white and red squares along the top row towards the middle; then placed the second black square in the right hand top corner. Now it happens that a frame of squares is one of the arrangements that cannot be made on a tray of these dimensions, so she found that a continuous line of red and white squares that fitted the edge of the tray could not be made. She then started down the edges, placing matching pieces first on one side then on the other, but found herself faced with the same difficulty at the bottom. She had now used all the colours of squares but yellow. She toyed with the yellow squares, put them down and began to experiment with black in the bottom corner. All this time her movements were slow and tentative and she never ceased frowning. Although there were plenty of black squares, she forced herself to fiddle with black half squares and to make the combination of two half squares to form a square on either side. The remaining space still defeated her; so she returned to the top line, tried a number of pieces, and found that the red equilateral triangle would fit into the central space and make the line complete. Experimenting again with other pieces, she found the two white scalene triangles and used them to square the equilateral triangle. She repeated these two rows against the bottom edge with green and white. She then tried hard to find a way of filling the empty corners at the bottom, and at last found out how to make an oblong with two scalenes and use these to fill the space

The Use of the Test

with a black oblong. She did not notice that this rectangle projected beyond the square next to it and so put out of alignment the central triangle with its side scalenes. She pushed these in and out for a little and then left it for the top edge of the pattern. Here she started with red and white equilateral triangles and was able to profit by experience to the extent of fitting the two white scalenes at the end to complete the row. She repeated this arrangement at the bottom with green and white, but was quite unable to cope with the irregularities in the centre edges which plainly worried her. Leaving these, she then started again with yellow triangles on the left hand side. As the carrying out of the Pattern to this point had taken a very long time, and it was now clear that she did not specially reject yellow, the psychiatrist joined her and began a discussion of the Pattern.

Had she finished? 'No', said in an aggrieved tone as if in answer to an absurd question. What was she going to do next? Came the surprising answer 'What you said'. The psychiatrist then asked what exactly the patient understood *had* been said to her; whereupon the patient, in tones of exasperated annoyance, both with the apparent stupidity of the psychiatrist and the infuriating nature of the pieces, said 'You told me to make a pattern round the edge, and this is what I am doing; but the pieces won't fit'. Before the question of the wording of the Instructions was taken up, her statement about the pieces was explored. It then became clear from her attitude that the idea of giving thought to the use of the pieces had never occurred to her. When, for example, the red triangle in the middle of the second row at the top of the tray projected beyond its neighbours, her reaction to it resembled the response one would make to a tiresome animal or child which would continue to poke its head out of a fence within which it had been ordered to stay. It did not occur to her to look for a cause for this behaviour of the red triangle, much less to understand how its behaviour came about. The printed Instruction leaflet was then brought and given to her. Having read it she agreed that the Instructions given to her were exactly those on the printed page, and was thunderstruck when she grasped that what had seemed to her so real and so tiresome had in fact been invented by her.

The making of this Pattern and the discussion of her whole response was a determinative event in her development. For the first time she saw objectively, and without the involvement of any living person other than herself, how, without any cause or external difficulty, she would create from herself an entirely unreal picture of a

situation, insist upon its accuracy, and then order her reactions in response to the situation she had thus imagined. Since she was a girl of intelligence and good intentions she took this example profoundly to heart, and the psychiatrist was able to use it as a typical example in unravelling the elements of the relation between her and the people and things with which she was involved.

To sum up, not only did this subject misinterpret the Instructions in a crucial way, but, as we shall see later, the form of the Pattern that she made was one that has been found, in all cultures so far studied, to be associated with the presence of neurosis in the maker.

(ii) Disturbance of the normal relation to the pieces

We have seen in the previous chapter that individuals who fall within the definition we have taken as covering the normal, feel free to do what they will with the pieces; they experiment with them, accepting some and rejecting others, without any difficulties appearing in their choice or manipulation, other than those connected with the skill necessary to achieve a complicated Design. But this is by no means always the case: in neurotic subjects two main types of disturbance occur in the relation between the subject and the pieces.

Here are two illustrations of this situation, one from an adolescent and one from a child. Let us take the adolescent first. Plate 107* was made by a Swedish girl at the onset of a schizophrenic breakdown. At first glance it appears as a completely confused mass of red, white and black pieces. But if it is studied carefully it will be seen that this is not so, but that there is an underlying structure which goes as follows:

A line of black, red and white squares along the bottom and the left hand side with an attempt to complete this as a frame around the tray. In the centre is a line of pairs of alternate black and white diamonds which are clearly intended to reach from the bottom to the top of the tray. On the left of this column is a crescent shaped arrangement of two red equilateral triangles, two black scalenes, and one red scalene, each piece projecting into the space between the adjacent two. If the pieces on the right of the column are studied carefully it will be seen that the same group has been repeated here, but the subsequent placing of the white square has pushed the red scalene out of place, thus altering the appearance of the group. So far, the intended Pattern can be traced,

* We are indebted to Dr Gösta Harding of Ericastiftelsen for permission to use this illustration.

The Use of the Test

but after this it becomes indistinguishable. Even the type of pieces used varies on the two sides: equilateral triangles predominating on the left, and scalene triangles and squares and half squares on the right. Only the even distribution of the three colours remains constant. What has happened therefore is this. The subject, having started to make a coherent Pattern lost control of the pieces, and was neither able to stop nor to place the pieces as she wished. As a result the whole tray was covered with an indiscriminate medley of pieces of all shapes, except for the diamonds which were correctly placed in the centre. That is to say the subject was attempting to make a Pattern with the pieces but they got out of hand.

In our second example (see Plate 108), we have a description, recorded at the time, of how this pattern was constructed. This runs as follows:

J.T. was a boy of eight and a half, I.Q. 144, from a broken home, referred for treatment for anti-social behaviour. (P. stands for the psychiatrist.)

‘Whistles Scotch tunes continually.

Places four squares, one in each corner, avoiding white. Row of half squares along the bottom between these, notes that these will not complete the row and accepts blank spaces so left. Two half squares placed at left and right bottom, and right and left top (i.e. on side of squares). Fills in half squares right side (i.e. with more half squares). Puts red scalene against edge of white half square at bottom right, another next to it against green, but does not realise difference in length of the scalene triangles and puts short side against the half square. Repeats next two (correctly). Stares at the first two, reverses the wrong one “so it comes the same as the other” (the other pair). Finishes ribbon along the base line up left side. (Wiggles when any difficulty arises or anything is completed).

He says “I’ll make a Punch and Judy Show” (pointing to middle). Uses colour only to make contrasts. Completes top edge now. “No I don’t think I will make a Punch and Judy Show.” (P. replies, ‘It’s too difficult’.) “How did you guess?” Starts with scalenes on bottom row. Has grasped that they fit one way round and not the other (calls putting scalene the wrong way: “making a mistake”). Very proud of himself when he gets it right. Starts left hand side in scalenes, puts one ‘wrong’, corrects it. Doesn’t notice that scalenes on this side are reversed. Puts white against white. Tries white equilateral against side of blue scalene (bottom row) and pretends it fits. Fits second green triangle against it. Repeats to right of this with yellow and black. (Makes mouth noises). Tries scalene in right lower gap “to finish off”, finds it won’t and removes it. Takes out from the box whole block of one set of pieces after other and puts to his mouth, and back. Says they are sweets. Takes out diamonds, puts two red upright ones in lower border. Repeats on right side and left side

The Use of the L.M.T in the Study of Neurosis

(not noticing difference). Changes position of centre diamond on right so it lies parallel to edge. Repeats this arrangement on left, but adds blue diamond.

"I'll try to use every one of these" (i.e. shapes) but does not. On left side adds red, then blue square fitting to sides of blue diamond. Says, "A piece of a body with a pair of trousers." (Later pushed out of shape, arrangement intact on right side). Repeats red and blue squares on left side, above. Yellow squares on right side against red diamond. He asks the name of pieces, says "equilateral is half a big diamond." Shows how two equilaterals make "a star". (i.e. when put on top of each other). Adds yellow and white squares to sides of black and red scalene on right. Puts blue, yellow and black diamonds against top ribbon, gives line up. Four green and one black diamond down left side, below these the black pushing red square out of place, goes on with line of diamonds on top edge. Finds last one difficult to fit in. "Is that nice? I don't like it." Puts red scalene in gap left side bottom; notices that the pieces are made of plastic. "My mother melted the top of my Biro because ink wouldn't come out." (P. 'Now you come to where it is difficult'). "I don't." Takes out a block of diamonds from box. "I'll prove it." Puts four of them untidily against top row of diamonds, then another row of four yellows, then four blacks. "It might not look easy to you but it does to me." Fills in remaining space with untidy block of diamonds. Becomes truculent as soon as there is any discussion of difference in pieces or difficulties. He would like to struggle and fight at the end. Is made to go. — O.R.

The personality of this child was much more intact than that of the subject of Plate 107, and therefore more of the Pattern was completed before the breakdown in control appeared. To the end, some kind of directing purpose remained in his desire to fill all the spaces in the tray, and his ability to stop when this had been accomplished without feeling further driven to pile pieces one on top of the other, as was done in Plate 107. From the making of these responses alone, therefore, these two Patterns and that of Plate 37 can be termed 'neurotic' responses to the L.M.T.

(iii) The commission of errors in the completing of a Design of which the subject is unaware

The second type of disturbance is the opposite to the first. In the first the subject spoils his own Design through a compulsive need to go on adding pieces after he has lost grip of the situation he originally devised. In the second, the subject thinks he has achieved a finished Pattern or Design that expresses whatever he set out to do and is satisfied with his attempt. In reality however he has made errors in its presentation which he has failed to perceive.

The Use of the Test

This question of error in the carrying out of a Design is a very wide one and very careful consideration needs to be paid to it, since such errors can be indicative of organic mental disease as well as of neurosis, the difference in diagnosis depending upon the type of error.

Errors in Abstract Patterns have a different significance from errors in Representational or Conceptual Designs, since they arise from different mental processes. They will therefore be considered separately. The general term Unsuccessful has already been discussed in Chapter Seven and a description given of minor errors in execution. We now have to discuss Patterns in which major versions of this type of disturbance have arisen between the subject and his manipulation of the pieces.

(iv) Types of error

(a) Unsuccessful Abstract Patterns

Compact Patterns with minor errors which the maker is unable to correct. This is the variety of minor error termed Essential and discussed on page 158. It is this type of response which bears a relation to organic cerebral disease. In Chapter Nine, page 242 an account is given by Dr Ellenberger of a particularly clear example of this type (see Plate 124).

The essential nature of Patterns of this group is that a subject will start out to make a formed Pattern, usually of a Simple Compact type, and will be partially successful; but at a certain point a piece will be selected that is of an incorrect shape for the completion of the Pattern. The maker will perceive the unsuitability of the piece chosen and will be disturbed by this, but will be unable, even after repeated attempts, to find a piece of the appropriate shape and use it correctly. In adults this form of failure indicates the presence of organic disease rather than neurosis.

Patterns with major errors which the subject is unable to correct. Perhaps the most frequent example of this variety of error occurs when a subject sets out to make a Pattern which covers the whole area of the tray, and is very determined to succeed.

Example one (Plate 39) was made by a soldier in hospital during the 1939-45 war while suffering from a skin complaint. Here the subject has set himself a task in which (as explained in Chapter Three) suc-

The Use of the L.M.T in the Study of Neurosis

cess is only possible in exceptional circumstances. Well balanced intelligent subjects, as soon as they have constructed a single row – for example the bottom line of half squares in Plate 39 – find that it is not possible to cover the whole space along the edge with this shape of piece without leaving a gap at one or other end; they therefore break up this line and start again with another shape. Or if they solve the single row difficulty as it was solved in the top row – or as the subject of Plate 37 solved it in the green and white row – they become immediately aware of the irregularity of outline which this will inevitably make in the corner, and once again break it up and start afresh. The obsessional patient is unable to do this. Having once committed himself to a task, he feels driven not only to complete the particular task he has set himself but to complete it in the way in which he has begun.

Thus in Plate 39 the maker, having started with an outer frame of squares composed of half squares, continues to force this into the available space on the tray. But when he comes to the second row, which is designed to be of whole squares in all the colours in the box, he once again runs into a difficulty at the corners. This he meets by using the combination of two scalenes, which he has already used in the top right hand corner, in the two upper corners of the second row. He succeeds in placing one complete square in the bottom right corner, and simply does not bother about getting the pieces to fit their corner in the bottom left hand junction of the vertical and horizontal rows. The third row is intended to repeat the general construction of the first, and here he is more successful. The irregularities of outline in the corners on the right do not trouble him, and he triumphantly completes the Pattern with six equilateral and twelve scalene triangles.

This Pattern, though not specifically neurotic, is a good example of one way in which failure occurs in Symmetrical Patterns, the maker forcing the pieces laid down to take a preconceived shape without taking note of the points at which his intention is failing. This is the characteristic response of the obsessional personality.

Example two (Plate 109)*. This is the response of a French boy of normal intelligence but educationally retarded. He was abandoned by his mother to whom he was greatly attached.

* We are indebted to Dr Claude Kohler of Hôpital Edouard Herriot, Lyon, for permission to include this illustration.

The Use of the Test

The main feature of the Pattern is a strong line of double diamonds stretching across the right top/left bottom diagonal of the tray and dividing it into two halves. The subject has made a conscientious attempt to fill the space of the tray on either side of this diagonal line but is not obsessional about it. He fits a row of interlocking fundamental hexagons on each side of the centre and attempts a row of squares on each side above this; but he cannot succeed without overlapping both the adjacent squares at one point, and also the edge of the tray. On the right hand he partially fills the remaining space with squares, but comes to grief altogether with the triangular space remaining on the left. Just as Plate 39 is an unsuccessful Pattern made by a compulsive subject, so Plate 109 is one made by an individual of hysterical temperament.

In the last two examples we have been considering the errors that have occurred in Patterns in which the whole area of the tray is involved. We need now to consider errors occurring in Centralised Patterns.

When a Centralised Pattern has major errors it inevitably falls into the class of Slabs, and may involve the difficult problems discussed in Chapter Four of the relation between Designed and Simple Slabs. On the other hand, errors not so marked as those can often occur, as in the following examples.

Example three (Plate 110). This was made by an English boy of six and a half referred for aggressiveness. At first sight it appears to be merely an irregular oblong of green diamonds rather badly shaped; but if studied more carefully, it will be found to have a certain amount of definite shape. Thus, it has a centre, a detached top, and two side pieces, in which an equal number of pieces are used, though not equal in shape or position. As this was done by a child of under seven, and all the red squares in the box were taken out to be arranged above, it is clear that this block of green represented something to the child and was not produced by chance. This was made clearer by the child going straight from this to a sand tray and building in it a carefully constructed house. The meaning of the Pattern was made clear a week later when he constructed Plate 17 and said it was 'A house on fire.' The relation between these two will be considered later in this chapter.

This inability to carry out purposes subjectively conceived can be of all degrees, ranging from subjects who sit silent before the tray, handling a few pieces, putting them down in different combinations, constantly changing their positions, and who finally give up the attempt saying 'I can't make it look like anything I want to', to subjects

who work a long time over a Pattern or Design trying again and again to make it 'go right', but always making the same kind of mistake and being unaware of doing so. Unfortunately it is impossible to illustrate any of these, but the use of the test with any group of manifestly neurotic subjects will afford abundant material for study.

Example four (Plate 62). This was made by a thirteen year old girl who suffered from asthma. She put a few pieces on the tray and irrespective of general form or of colour fitted them together. She then tried to 'build pieces round them', from time to time moving the block of pieces she had made to other parts of the tray, and finally leaving the Pattern when it had reached the shape illustrated, although, she said, 'it is not really finished'. She had two aims: to make the pieces fit exactly and to make the edges of the whole block smooth. She was not interested, she said, in colour or in pattern.

This Pattern therefore falls between the Eu-type Composite Pattern and a large Slab. It is of course not at all difficult to make a Centralised Pattern in which the pieces would fit together and the edge be smooth. The high level of this girl's inherent intelligence should have made it possible for her to accomplish such a Pattern easily and her failure to do so, in spite of concentrated attention, is a good example of the way in which neurotic factors in the individual interfere with the achievement of goals which, apart from this disturbance, would be well within the scope of the subject. Here, although she saw that what was left was simply a mass of pieces, fitting together but quite unrelated in any other way, she was unable to do anything about it.

It is impossible within the allotted number of illustrations to give further examples of this type of Pattern, and discussion of this Pattern from other points of view will be found in Chapter Ten where it is compared with Am-type Patterns.

Until we have a great deal more material regarding the mental processes which accompany the making of Am-type Composite Patterns, we cannot know whether Plate 62 is a true parallel or not, the essential question being that of the objective in the mind of the maker of the Am-type Composite Pattern or the inner criterion by which the process of construction is guided.

(b) Unsuccessful Representational Patterns

We now come to consider evidence of neurosis given by failure to

The Use of the Test

complete a conception in Representational Designs. As in drawings, so in Representational Designs, now and then essential parts are omitted or additional parts added in an irrational manner. A Design in which such absence or additions appear which are not perceived by the maker is clearly a neurotic Design.

Example five (Plate 111). Here a boy of seven has made two figures, and by putting a half square into each corner of the tray has placed them in a primitive frame. These two figures he called a Dutch man and a Dutch woman. The man has all his limbs, but the woman lacks arms. This lack cannot be due to failure of perception, as the epithet Dutch is derived from the equilateral triangles placed on either side of the head, suggesting quite neatly the wings of a Dutch peasant head-dress. The maker of this Design was pleased with it and, even when specifically asked, could not see that anything was missing.

2. ABSTRACT PATTERNS WHOSE FORM IS ASSOCIATED WITH NEUROSIS

(i) Patterns with a relation to the edge of the tray

In all collections of Mosaic responses so far made in any culture the opinion of the workers responsible for their collection is unanimous that there is a definite and practically unvarying connection between certain forms of Pattern and the presence of neurosis in the subjects who make them. These Patterns are in the main those that have a definite relation to the edge of the tray, such as Frame, Edge, Corner, and the like. A Frame Pattern (see Plate 37 which we have already considered) is an example of a Pattern that is indicative of neurosis in the subject. This particular Frame Pattern is also unsuccessful, but this need not at all be the case. It is the form of the Frame Pattern that has been found to be associated with neurosis in the maker, and this form can be represented in an almost unlimited number of variations.

As far as European subjects go, it has been found that the well adjusted individual constructs his Pattern or Design freely within the area of the tray, looking upon the edge or rim of the tray much as an artist does upon the frame of the picture he has painted. On the other hand, subjects above Kindergarten age who make Frame or Edge Patterns are unable to move from the edge into the centre of the tray,

The Use of the L.M.T in the Study of Neurosis

and construct Patterns which cling to the edge of the tray as the only kind which occurs to them. There is a great deal of variety in the actual construction of these Frame Patterns. They can be successful or unsuccessful; they may be one line broad with a straight inner edge, or be constructed of several lines with an irregular edge which projects symmetrically at various points along its course. The colours used may be indiscriminately disposed about the Pattern, or deliberately used to enhance the symmetry.

What is interesting about these Patterns is the number of patients, including both children and adults (but perhaps more frequently children) who begin by making a single Frame Pattern, or a series of such, but whose Patterns during the course of psychotherapeutic treatment begin to grow out from the edge, to add a central item, to join part of the edge to the item or to run diagonal lines from one point to another of the tray, and finally to end up with a well balanced, well constructed, Symmetrical Abstract Pattern placed freely in the centre of the tray: this development coinciding with a satisfactory outcome of psychotherapeutic treatment.

In Chapter Three the types of Pattern termed Frame and Item have been described from their formal aspect. Such Patterns occur as a normal manifestation in the ordinary course of development of children. After this age there are three main forms in which this general group present themselves. These are as follows:

- (1) A Frame is constructed which is fitted closely to the edge of the tray and may be formed of a single line of pieces, or the inner line may project, either regularly or irregularly, towards the centre. In the centre, and quite detached from the frame, is a small independent Pattern, usually symmetrical.
- (2) This takes the same general shape as the former, but the Frame, though roughly the same shape as the tray, is not attached to the edge, and may even be at a considerable distance from it.
- (3) In this variety, a Frame can be made of any shape, and be placed anywhere on the tray, within the centre of which will be a separate small item.

The first variety is by far the most common, and in practically all cases has been found to be associated with neurosis. It is outside the scope of this book to go into the points which have to be weighed in case of varieties (2) and (3) before a decision can be made as to

The Use of the Test

whether a given example does or does not indicate the presence of neurosis in the maker.

Patterns that cling to the edge need not go all round the tray. Very inhibited subjects sometimes construct a small length of Pattern along a portion only of the edge of the tray. Sometimes one or two of these may be made, placed at unequal intervals along any edge; these may consist of a single row of pieces or show almost any variation. Their significance has been found to be the same as that of Edge Patterns, but with an emphasis on generalised inhibition in the subjects.

Corner Patterns As far as our knowledge of the L.M.T. at present goes, all European responses which have taken the form of a single Pattern fitted into the corner of the tray have been associated with neurosis. It is not clear whether this is altogether true of patterns collected in the U.S.A.

Single Corner Patterns can be of any variety. The one illustrated in Figure 8 was made by an English girl of thirteen suffering from asthma and a profound neurosis. It is a square Symmetrical, Compact, Abstract Pattern with a perspective effect of short pillars thrusting outwards in each corner, and is fitted into the top right hand corner of the tray. Many Corner Patterns are Symmetrical; they may also be Intermediate, and at least one example in our collection is Spaced.

Corner patterns occupying two corners of the tray do occur but they are rare. When they occur, the individual Patterns duplicate each other.

The subjective situation that gives rise to an impulse to make a Corner Pattern seems, from the evidence available, to be a feeling in the subject of profound devaluation and inadequacy. It is as if the maker says 'I am not big nor important enough to fill a whole tray; I feel able to occupy only a very small space in life - look, here I am in one corner'.

What is fairly common, however, is a type of Corner Pattern in which constructions are made in all four corners of the tray and which usually project towards the centre. These may, as in Figure 7, be accompanied by a small central item, or the centre may be empty.

There is again strong evidence to suggest that these Patterns do not occur in the absence of neurosis in the maker, except when they occur

in connection with puberty in girls. Evidence from psychotherapy suggests that what is being expressed is the turning of the aggressive forces of the personality inwards against the self.

Pendant Patterns One of the variants of Edge Patterns that has a neurotic significance is the Pendant Pattern, which is illustrated in Plate 38. A Pendant Pattern is an Abstract Pattern with Recurring Form whose upper edge is attached to the upper edge of the tray and which hangs downwards from it. These again may be of all shapes and sizes, the main characteristic being the curious desire of the maker to attach the upper surface to the edge of the tray furthest from where he is seated. It has been found in practice that subjects who make this type of Pattern are expressing in it their feeling of dependence upon their immediate environment, whether or not they are aware of this. In the particular Pendant Pattern illustrated in Plate 38 there are other implications which are discussed on page 172.

(ii) Patterns with a relation to the whole area of the tray

(a) Scattered or Incoherent. This is one of the groups in which a striking difference appears between Am-type and Eu-type responses. In Chapter Ten we will see that it is perfectly possible for a Pattern to be made which makes full use of the area of the tray and has no formal *gestalt*. These are called Diffuse Patterns and Plate 64 is an illustration. But, as has already been pointed out, in almost all European subjects, absence of a *gestalt* implies failure to achieve a *gestalt*, and if the subject is above the age of six years such a failure can only come about either through the presence in the subject of a Primary Amentia or of interference by neurotic or psychotic processes. There is of course a marked difference between Diffuse Am-type patterns and scattered pieces placed in the tray in Eu-type responses, not only in the manner in which the response is made but also in the attitude of the subject both to the test materials and to the finished response.

(b) Disordered. In Patterns that have an intricate relation to the area of the tray and also in those which make use of the whole area of the tray, cases occur in which it is clear that the subject desired to make an ordered arrangement of different groups of pieces over the area of the tray, but has not been able to accomplish it. In this type certain pieces and groups of pieces will be placed correctly, and certain not, again owing to the presence either of amentia or of neurosis.

The Use of the Test

In addition to the general characteristics we have hitherto been considering in this chapter, there are certain special forms and uses of colour in Designs that are associated with the presence of neurosis.

(iii) Specialised forms of Centralised Patterns

(a) Winged. As explained in Chapter Three, Winged Patterns are Patterns in three parts, two of which are mirror images of each other. These are specially interesting because, apart from their particular shape, they are usually well constructed and Successful Patterns. But experience has shown that, while individuals who make these Patterns are often successful in life and continue to be successful so long as their inner and outer conditions remain stable, yet, as illustrated in Chapter Seven, page 198f, an inner danger remains that the personality will fail to stand up to a situation that is experienced as sudden or prolonged strain. This is of importance in picking men and women for posts involving sudden changes and strain in isolation, for which their other and outward qualities might seem to make them well fitted. For in individuals who produce this type of Pattern some conflict appears to be present which is basic to the structure of the personality itself, and which, if the maker of the Pattern is subjected to adverse conditions, may well result in disaster.

Such Patterns exemplify the difficulty of labelling Patterns either normal or neurotic. Winged Patterns are rather Patterns that indicate possibilities in the maker which may well be dormant all their lives, but which may with equal probability bring about severe disturbance of emotional and mental health. The Pattern illustrated in Plate 31 is an example of a Winged Pattern made by an outwardly stable young woman.

In the centre is a vertical line made of blue and red scalenes and half squares. On either side is a half hexagon. Two heavy perspective blocks on either side rest against the sides of the hexagon. If the centre strip is removed the two sides of the hexagon could come together forming an Oval Pattern to which four heavy blocks of pattern are attached.

Winged Patterns can be of any shape or class, Compact or Intermediate, and the dividing section can cut the total Pattern at any angle. As indicated in the Table in Chapter Five, these Patterns tend to appear in normal children with the stresses of adolescence; but with successful solution of these stresses they may later disappear.

(b) Cruciform. What has been said of Winged Patterns is to some extent also true of Cruciform Patterns. Generally speaking a Cruciform Pattern is made by individuals in whom two major drives are at variance with each other and therefore produce a complete standstill. It is also associated with the idea of guilt. For example, the Cruciform Pattern illustrated in Plate 33 was made by a boy of thirteen and a half who had become completely blocked in his school life, his performance being far below his intellectual level. In manner he was nervous, twitchy and hesitant, and he was altogether unable to make a satisfactory contact with life at any level, in spite of having, as it turned out later, quite an adequate emotional equipment.

The Pattern is an Abstract, Compact, Successful Pattern with Recurring Form, symmetrical about all axes in form and colour. It presents a heavy white and blue cross arising from a red centre, surrounded by white, and the green diamonds which embrace the corner blue squares make a second St. Andrew's cross. The spaces between the arms of the two crosses are filled in with red.

This boy was the only son in a family of four children with a dominant managing mother and a feeble County father. The Pattern expresses what he felt, to those who are sensitive to symbols, more effectively than pages of print. It gives the effect of a double cross upon a red ground; the feebleness of the colouring of the cross aptly expresses both the boy's colourlessness and his guilt for this lack of aggressiveness. At the same time the red core presents a block of undifferentiated feeling which is centralised and could well develop.

A Cruciform Pattern is not always associated with neurosis. A cross can be a symbol of balance as well as of conflict, and some Patterns take the shape of a mandala. The distinction between the two belongs rather to books upon Psychiatry and Symbolology than to a text book on a practical test; and there is little in reference to the cross in the use of the L.M.T. which is not true of the use of the cross and of Cruciform Patterns in any form of design.

(c) Anthropoid. Anthropoid Patterns are half way between Patterns and Designs. They are arrangements of pieces, usually compact in type, which are intended by the subject to be 'just a Pattern', but which when completed present unmistakably the form of a human figure. When this is pointed out to the subject the response can range from flat incredulity to amused acceptance according to the situation

which brought about the subject's unawareness of what he was doing. Plate 38 for example is Anthropoid as well as Pendant, but the resemblance to a human figure is primitive. The head is represented in a single black square, two black and one white half squares forming the shoulders, four scalenes forming the arms, a square block the body, and four blue diamonds very truncated legs. In Plate 113, on the other hand, the position of the legs and the enormous emphasis on the phallus makes it quite clear where the maker's driving interest lay, and why this boy concealed his interest in genitals in a pattern, rather than expressing it frankly as is done in Plate 112. This Pattern is further discussed on page 234.

3. INTRINSIC NEUROTIC QUALITIES IN REPRESENTATIONAL DESIGNS

From the examination of a very large number of such responses it is possible to make certain generalisations concerning the evidence of neurotic disturbances as they appear in other forms of response than those already considered.

Apart from the questions of omission or duplication of essential features of what is represented, and of a neurotic quality in the content presented, there are other characteristics of Designs which are easily recognised as deriving from disturbance in the subject.

(i) Designs in which the content is neurotic

When we turn to the next class, that of Designs with a neurotic content, we are on identical ground with all projection material. The imaginative content of Mosaic Designs can be humorous as in Plate 6, romantic as in Plate 4, decorative as in Plate 11, or can give stylised expression to a concept as in Plate 16. But when such things occur, as in Plates 12 and 13, we find that the same process of analysis has to be applied as to any projective production of either child or patient, and will give parallel results.

Example six (Plate 112). This is a delightful example of such a presentation. It is a Collective Design made by an English boy of six suffering from enuresis and spiritedly illustrates his emotional situation. In the centre is a lively figure called 'the man', so constructed that the central diamond which forms the body projects slightly between the

The Use of the L.M.T in the Study of Neurosis

red scalenes which form the legs. Pointing to this small projecting green point the maker said 'it's his willy' (penis). In the man's left hand is an uplifted red diamond, said to be 'the man's sword', and in his right a yellow scalene said to be 'his gun'. Below the man is a white square, 'his potty', and he is 'doing wee-wee into his potty'. On the left a train comes towards the 'potty' and below, a long path of diamonds leads up to a red square with a green triangle on top, which he said was 'the man's house'. Whether this design is felt to belong in a chapter on neurosis or not, will depend upon the view of the reader about the emotional development of boys and the part played by enuresis in it. What the design does make clear, however, is the vividness of presentation of a subjective state which can be achieved with the L.M.T.

Example seven A design can be so phantastic of itself as to suggest disturbance in the maker. For example, Plate 13 is a phantastic Representational Design made by an English boy of nine of normal intelligence. The loosely constructed group starting at the top left hand corner and running obliquely down the centre of the tray is said to be 'a Venus animal' with the upright white scalene as 'it's tooth', the group at the top 'Venus bird hanging upside down', the group in the left bottom corner 'a Venus man', and the group against the bottom edge 'ammunition', the upright green diamond being 'the tail of the ammunition' and the two red squares 'live ammunition'. This is a borderline design growing out of the Science Fiction comics children now read, but showing in its lack of form an absence of power to manipulate the pieces so as to present the subjectively imaged concept which is characteristic of the neurotic failure to adapt means to ends.

Example eight (Plate 12). Here we have the opposite situation. Here is a Design most competently carried out, which represents a phantastic scene composed of mythical symbols. On the left is a well, but instead of a bucket and cord a snake twines along the winch. On the top of this sits 'a bird of ill omen' dramatically and economically presented in three black pieces. On the right is a tree, schematically but effectively carried out in green, black and white, with 'a forbidden fruit'. Between the two a small human figure stands with upraised arms, and on the extreme right is 'part of something which has fallen

The Use of the Test

— it might be a star'. It is conceivable that such a scene might be deliberately made by a well adjusted individual as 'a phantasy', 'a dream', or 'a fairy story'. When made as a direct response to the L.M.T., however, the content comes into the class of neurotic phantasy and the contrast between the competence of the execution and the extravagance of the content, together with the content itself, suggests more about this patient than can conveniently be put into a book concerned only with the L.M.T. This illustration is selected from a large number of phantastic Designs made by disturbed individuals which are extraordinarily successful in conveying the content they set out to present, and is intended only to make clear the possibilities of the material in this direction and not to raise the whole question of the relation of mythological phantasy, and competence in construction, to disturbances of personality.

(ii) Lack of cohesion

This may occur in the parts of the Design. It is the most important characteristic indicating disturbance and is exemplified in the Windmill illustrated in Plate 120. This Design was made by an engineer during a period of disturbance over his general life situation, and shows a massive construction, none of whose parts really cohere together, the sails particularly giving an appearance of falling away from the central building.

(iii) Incomprehensibility

Plate 14 is a good example of a type of Design that occasionally appears in which the complexity and only partial realisation in the subject's mind of a many-sided idea issues in a presentation that to him has significance but which is meaningless to the outside eye.

(iv) Distortion

In the representation of human figures by patients seen either in consultation or during treatment, distortion of essential parts of the body plays a conspicuous part. In J.T.'s second Design in Plate 114, we have an example of this kind. It is commonly in the head that the distortion occurs, but bodies can also be made enormously fat or arms too long: indeed any form of distortion with which we have become familiar in the drawings of disturbed subjects can at one time or another appear in Mosaic Designs.

The Use of the L.M.T in the Study of Neurosis

(v) Conceptual Designs

As there is no standard for a Conceptual Design with which any Design can be compared, the presence of neurosis in a Conceptual Design can only be related to its content. For example, had Plate 18 been made by a farm labourer or a village housewife it would suggest the presence of 'inflation'; but in a professor such a concept would be perfectly normal. Similarly Plate 19 with its pessimistic outlook, suggests apprehension and depression. Of Plate 20 little can be said with certainty from the Design alone, except that the imaginative power, selective ability, ingenious use of pieces, and the balance of the whole Design are suggestive of a thoughtful and well integrated personality.

Returning to the question of Abstract Patterns. In Abstract Patterns with Recurring Form there is an aspect in which evidence of neurosis can appear in the form of the Pattern itself.

4. INTRINSIC NEUROTIC QUALITIES IN ABSTRACT PATTERNS

We have no evidence as yet concerning the changes that take place in Am-type Patterns during the process of psychotherapeutic treatment. We have also insufficient Am-type Patterns made by clearly neurotic subjects to be able to form any general ideas as to the mode in which these will differ from those made by normal subjects. We can therefore only deal with Eu-type patterns.

Apart from those characteristics already considered the following qualities are usually found in association with neurosis.

(i) Very small, simple Patterns

Here we are in the same difficulty of assessment as between Am-type and Eu-type Patterns, as in the collections of responses made in the U.S.A. that we have had the opportunity to study, quite a definite proportion have been of very small Patterns. We must wait for American work to get the significance of this phenomenon. In collections made in Europe the fact that very small Patterns made by subjects of normal intelligence are an expression of extreme inhibition is shown in the way the Patterns of the same subject will develop if psychothera-

The Use of the Test

peutic treatment can be given. This is a parallel phenomenon to the coartact of the Rorschach test.

(ii) Small Complex Patterns not placed centrally in the tray

Very small Patterns are usually also very simple in structure, only a few pieces being used and those of the simpler types. But another class of small Pattern is commonly met with that is associated with neurosis; this is the type illustrated in Plate 121. These are also very small Patterns but Complex in type and usually form the signature tune, as it were, of the personality. The form is small, it is very often attached to the lower edge of the tray, and it has a very cramped appearance. Nevertheless what there is of form in the Pattern tends to become the kernel of later Designs, as the diamond of diamonds and the use of scalenes in Plate 121 opened out into the complicated structure of Plate 35.

(iii) Successful Patterns with individual neurotic features

There is no royal road to the understanding of neurosis as reflected in the L.M.T. any more than in any other clinical instrument, and in this chapter only the basic forms can be given in which the influence of neurotic forces can be expressed. As in all other clinical manifestations, it is the general balance of features in the Pattern that are important and only considerable experience both in the use of the L.M.T. in clinical work and of the processes of psychotherapy themselves can bring about a satisfactory understanding of the Patterns made by patients. One variety is however easily perceived and significant in meaning:

The Pattern with a Hollow Centre Now and then it occurs that a Pattern will be successfully completed and yet have in the centre an irregular space, as in Plate 48 already cited as an example of Simultaneous Circular Movement in opposite directions. In the case of Plate 48 the space in the centre is radially pierced by scalenes directed towards the centre, but in many Patterns with a Hollow Centre the centre is quite bare with nothing projecting into it. Such a space in the centre of any Pattern may be of any shape and both large and small: The significance compares with the 'feelings of inner emptiness' of the Rorschach test and indicates a personality in which a central core is lacking.

The Use of the L.M.T in the Study of Neurosis

5. COLOUR IN RELATION TO NEUROSIS

It is in the use of colour that neurotic forces come, at times, most clearly to expression.

(i) Black

It is not necessary for black to be associated with neurosis, since, as pointed out in Chapter Three, many children find the black pieces enjoyable, and black can also be used, as in the Rhinoceros or the Horse, for realistic or decorative purposes. When a number of black pieces, however, form the centre of a Slab (see Plate 122) or Incoherent Pattern, these are indicative of a serious degree of depression. Plate 122 was the first Pattern made by an intelligent boy of eight who was the middle child of a large and warmhearted professional family, referred for enuresis. It indicated, what subsequently proved to be the case, that the enuresis was the expression of a marked depression in the child.

Should black occur as the centre of a Successful Pattern, only with judgment and experience can its true significance be assessed.

Black often occurs in the centre of a Pattern made at the beginning of a course of psychotherapeutic treatment and continues to appear throughout a series of Patterns made by the same subject until the central core of depression or guilt has been resolved, when another colour will take its place. It is this merging of black, in successive responses, into more cheerful colours and the association, in time, of this change with the resolution of disturbance which determines the significance of the black in the earlier patterns.

Example An interesting example of the use of black pieces to express a neurotic personal situation is shown in Plate 47 where black diamonds and squares are used in a conventional yellow and white Pattern to express the idea of inner whirling movement. This Pattern is a good illustration of the amount of information that can be conveyed by the arrangement of colours in an otherwise unexceptional Popular Pattern. This was the pattern of a young married woman, intensely devoted to both the large family clan of which she was a part and to her own children. The relations, however, between herself and her father, and herself and her husband, had brought her to seek psychotherapeutic help, and the interior whirling black together with the

The Use of the Test

white outside pieces vividly expressed her feeling of depressed inner tension, together with feelings of unreality at times in her outer contacts, although the general atmosphere of her personality was cheerful. In Representational Designs black occurs much more rarely as an expression of stress or of depression. As there is no brown in the the available range of colours, black most usually takes its place and it is, in our experience, only in the responses of artists that it plays a major part in expressing anxiety or depression in Representational Designs.

In Conceptual Designs our experience is as yet too limited to make possible any insight into its use.

(ii) Black and white

According to the context in which a Design occurs the exclusive use of black and white can either be expressive of aesthetic values or of retreat from emotional experience or expression. Plate 43 is an example of the use of black and white by an ingenious intelligent boy of nine showing definite though not intense evidence of retreat from affective experience. Plate 123* made by a Belgian girl gives another interesting variant of the use of black and white to express a personal situation. This was made by a girl of twelve and a half referred for inability to see at school, in which was mirrored withdrawal from external reality. The Pattern in its black and white repetition of identical forms has a relation to the work of reading black print on white. Its coarctation expresses her withdrawal which was in fact based upon an insignificant but real defect of vision.

(iii) Red

Red is a very important element in Mosaic responses. In Representational and Conceptual Designs it can be used directly to represent, as in paintings, ideas such as fire (see Plate '17) or blood, which are expressive of anxiety. This use is comparatively common. Red also can indicate pathological excitement as when it is used exclusively or almost exclusively for the representation of a person, an animal, or a theme. In Abstract Patterns it is the mode of use of red which is sig-

* We are indebted to Dr Dellaert of Antwerp for permission to use this illustration

The Use of the L.M.T in the Study of Neurosis

nificant. As with black, it is only in conversation with the subject that it can be ascertained whether the colour has been used by the subject because it is pleasing to him and appears to him to have a cheerful connotation or whether it expresses anger or destructiveness. It can be symbolic of hidden dynamic force as in Plate 30, have the significance of something that pierces as in Plate 32, or be used as the main feature of a Complex Pattern. Once again limitation of illustration makes it impossible adequately to describe this feature and it is only with experience that judgement can be acquired of the significance of red in any given pattern.

(iv) White

This is a colour the significance of whose use varies greatly with different subjects. We have noticed that in collections of Designs made in the U.S.A. completely white Patterns occur far more frequently than in those from European subjects. It is possible that this may have a relation to the prevalence of white as the outside colour of houses and churches in many parts of New England. In European collections wholly white Patterns are rare. White when it is used in European responses has usually the significance of negation (as for example in the second response quoted on page 234). If it appears in the centre of the Pattern it has much the same significance as a Hollow Centre; if on the outside of a Pattern it indicates a certain neutrality, or inhibition, or awkwardness in social relations as has already been pointed out in the description of Plate 23. If white occurs at the base of a pattern a feeling of insecurity and nothingness is indicated. Like the other colours white can be used for purely decorative effect and once again care should be used in its interpretation. At times however the placing of white in a Pattern is dramatic and the subject will readily agree that it expresses a sense of de-personalisation and emptiness of which he is acutely conscious.

(v) Yellow

This is a cheerful colour, used almost uniformly by children to represent the sun. Patterns wholly carried out in yellow have not yet been met with, but very rarely a neurotic significance is given to the colour through association in the mind of the subject between it and pus or urine. Apart from this type of association, no intrinsic connection has

The Use of the Test

been observed between the use of yellow and the appearance of neurotic traits.

(vi) Blue and Green

These colours in themselves and used singly give no evidence of neurosis in the subject.

(vii) Combinations of colours

Now and then a subject will make use of colour combinations to vary and to give a different significance to an otherwise satisfactory Pattern. Plate 24 made by an English Preparatory School boy is an example of this. Here blue and red on one side and green and white on the other have been used to divide a very ordinary square pattern built almost entirely of squares into two halves. This kind of colour dissociation indicates a cryptic dissociation in the subject which was very evident from the psychiatrist's point of view, though quite hidden from his family; this boy was struggling to keep an acute inner conflict hidden from the eye of his surroundings and only succeeding in falling behind in his school work.

The interpretation of colour is perhaps the element in L.M.T. responses about which most caution should be used. Colours mean so many different things to different people; for instance yellow, in Europe so definitely cheerful a colour, has been found by certain American psychiatrists to be associated with ideas of dreariness and dullness. It is essential that before any interpretation of colour is made, the tester should draw up a table of colour associations common in his area, with which those used by the subject in his Designs should be compared.

6. RELATION OF THE L.M.T. TO PSYCHOTHERAPY

Perhaps the most impressive evidence for the intimacy and directness of the responses to the L.M.T., considered as an expression of interior experience and present subjective state, comes from watching the development of a series of Designs made by patients of any age undergoing psychotherapy. The limits to the number of our illustrations allow us to give only a very few examples of these.

Example nine Let us take first the subject of Plate 37. Owing to the

The Use of the L.M.T. in the Study of Neurosis

shortness of her stay in England, she was only able to undergo a brief course of psychotherapy, but in this period considerable clinical progress was made. On her second visit she set out deliberately and spontaneously to make a Frame Pattern, not because she thought any longer that this was incumbent on her, but in order to prove to herself that she was able to do so. She was a girl of very limited imagination and very bound by her own compulsive nature, and what she made was banal; nevertheless, she tackled the technical difficulties with determination and succeeded in completing a successful Frame Pattern.

What she had learned about her own reactions from her first Pattern impressed her deeply, and formed a core of realisation about herself around which treatment could centre. There was no opportunity for her to make further responses during treatment and her first two were not again referred to. On the last day of her stay in England, however, an opportunity occurred to present the test to her again, and on this occasion, in a much shorter time than in the two previous responses, she produced a Successful, Spaced, Centralised Pattern made of squares, square in shape and symmetrical both in form and colour.

Example ten (Plate 114). Development in the case of the boy J.T. took a different course. He too was rather impressed with his failure to achieve a result in the Pattern illustrated in Plate 108 and some weeks later set out to make another attempt. While making Plate 108 he had remarked that two squares placed up against the sides of a diamond looked like part of a body in shorts; he now started with the same idea in mind.

He selected and placed horizontally in the centre of the tray a white diamond and added to it a black square against each of its lower sides (see Plate 114). These formed the legs of a figure, and he added a white diamond to each to form the feet. From this point he began to work upwards with red pieces (his school had red blazers) to form a body and arms, and succeeded quite creditably. Characteristically for a boy with his inability to form human contacts, it was with the head that he failed, producing with yellow pieces something much more like an animal than a human head.

Nevertheless this change in his response to the test expressed a corresponding improvement in focus: he was better able, if he wished, to control his forces and use his abilities to achieve a desired end.

Example eleven In this example yet another form of development

The Use of the Test

took place. Plate 109 was made by a boy who was under treatment by a French physician in Lyons: ten months later he made a Representational Design (see Plate 115) representing a single flower and two buds or leaves (the indiscriminate use of colour makes it difficult to tell which is intended). The interesting thing about this Design is the way in which the general ground plan of the Abstract Pattern (see Plate 109 described on page 215) reappears, with the lines of diamonds sloping upwards from right to left and blocks of diamonds branching off them. The subject has confined himself to one shape of piece, and possibly by doing so has contributed to a better control of his material.

Example twelve In the subject of Plate 107 the same type of development took place as in the subject of Plate 37, as later in the course of treatment a balanced and successful Abstract Pattern with Recurring Form was spontaneously made.

Example thirteen Reference has already been made to the shapeless Slab-like arrangement of green pieces illustrated in Plate 110, and the later response of the same child in Plate 17. Here we see in the use by patients of the L.M.T. the appearance of the phenomenon so familiar to all psychiatrists: that of the emergence during treatment of an apparently meaningless phenomenon whose significance becomes evident only in the light of later material. In Plate 110 the shape of the house has already appeared and the idea of fire is already present, symbolised in the line of red squares above the green block. As treatment progressed it became possible for the child to permit himself to know the fears he had been repressing and the red becomes embodied in the fire which flames over the house in Plate 17. Later he did another Representational Design depicting a Christmas tree on fire.

Example fourteen In the case of the subject who made the anthropoid pattern of Plate 113, a particularly interesting development occurred. This was a tragic English boy of thirteen who had been given by his doctor only eighteen months to live owing to the extensive destruction of his lungs by bronchiectasis and to the present severity of his asthma. This boy had suffered a crude circumcision at the age of three for masturbation. Plate 113 was his response to the L.M.T. on his Consultation visit in 1953. Psychotherapeutic treatment was

The Use of the L.M.T. in the Study of Neurosis

immediately begun and two weeks later he made another design – this time frankly ‘a man’, with thighs spread out; but in this second response the angle between the legs was filled with a white half square from whose smooth horizontal base nothing projected. The boy agreed that this second design was a picture of what he feared, would happen to his own genitalia. This combination of abstract presentations with vaguely representational elements is not at all rare and often very complex to interpret.

In series of mosaic responses made during psychotherapeutic treatment all the possible varieties of response can appear successively in a single patient. Plates 86 to 88, 89 to 91 and 92 to 94 of normal children give some idea of how a basic and individual quality can persist through a number of changes. Limitations of reproduction make it possible to illustrate only one short series of Designs made during psychotherapy.

Example fifteen B.A., an English girl of eight and a half of normal intelligence, from a professional family, was referred for pilfering and temper tantrums. At her first interview she made the Pattern illustrated in Plate 116. This is an Abstract, Compact, Centralised Pattern, which was unsuccessful because the maker would have liked the whole to have been completely oblong and could not see how to achieve this with the bottom line; for this reason it is not entirely symmetrical.

The pattern consists of three rows of seven squares placed one under the other, coloured white, green and black respectively. Below the black line comes a line of ten red equilateral triangles which could have been kept symmetrical if the final red triangle on the right had been omitted. Below this is placed a row of seven blue squares; but because of the additional red triangle below which this line of blue starts, it fails to fit evenly under the other row of seven squares. Along the top of this block runs a row of five white oblongs made by fitting scalenes together.

In the next pattern, Plate 117, made by the same subject, the white has disappeared and the relation of the other colours to each other has been reversed, so that blue is now at the top and green at the bottom.

One square has been added to each row so that all the available squares have been used and the Pattern is exactly symmetrical. The main horizontal blocks

The Use of the Test

of colour have been lengthened, while the red has been abruptly curtailed. The triangularity has been maintained, but it has been reduced to form single right angled triangles (half squares) arranged above four black squares, in the manner of roofs to four little houses. On the right of each of these stands an upright green diamond like a tree.

When this child was first seen, she was in great confusion of mind. Her mother was a professional woman much occupied with her duties; her father was a clergyman, and she had one younger brother. She felt inadequate and neglected, and expressed her reaction to her inadequacy in her pilfering and to the neglect in outbursts of rage. Her second Pattern expresses this feeling of being crushed between two heavy and impenetrable layers (the parents upon whom neither her protests nor her pilfering produced any real effect); and the little country house with everything quiet and domestic, which was her dream is repeated four times between the pressure of these two planes (which stand equally for earth and sky).

In her third response, Plate 118, the tight oppressive structure is beginning to break up.

On the left of the Patterns three little houses stand boldly by themselves on their green grass with the blue sky a long way above. On the right are five erect black diamonds, each crowned with a green right angled triangle, like five little trees; two of them stand firmly on a black earth. This pattern corresponded with a period when she was getting her values and her aspects of herself sorted out, and was becoming aware of the masculine and feminine aspects of herself. The oppression of the adult world upon her was lessening.

In her fourth and last response (see Plate 119) the earlier form of Pattern has disappeared altogether, and its place is taken by a Compact, Centralised Pattern with Recurring Form, successful and symmetrical in form but not in colour, and belonging to the sub-group: Oblong.

In this Pattern we have a central star mainly yellow but partly red, into six of the angles of which four blue and two green squares have been fitted, the angles at the top and bottom of the star being filled with a V shaped arrangement of diamonds which in their turn embrace a green square. The new feature in this Pattern is the central star and the colour, yellow, in which it is carried out; this corresponded with a conspicuous lightening of subjective atmosphere in the child. The black has disappeared, and the blue and green

The Use of the L.M.T. in the Study of Neurosis

now blend with each other; the red appears in the centre of the Pattern, the slight irregularity of the arrangement of the red colouring reflecting the general carelessness of the child's character.

It is quite impossible within a single book to give any idea of the richness of response that can be obtained from patients during the course of psychotherapy, but in this period considerable clinical progress upon the processes at work in the patient, but several decades of experience with the use of the L.M.T. during the process of psychotherapy has made it clear that it offers a reliable and exact instrument for assessing the progress made by a case. It is the general experience of therapists who use this instrument as part of their technique that it may be unwise, in spite of marked apparent clinical improvement, to discharge a patient as recovered so long as the Mosaic Design continues to exhibit neurotic characteristics.

7. OTHER MODES OF APPROACH TO THE STUDY OF NEUROSIS

So far we have considered a use of the L.M.T. in the study of neurosis that is based upon an analysis of the individual Pattern or Design, seen against the whole range of possible Designs; and it cannot be said too strongly how important it is for the whole range of possible Designs to be held in the mind as a background for the assessment of any individual Pattern. There are however other ways in which the materials of the test can be used for diagnostic assessment.

Unfortunately it would lead us too far afield to consider in detail the significances, for the assessment of neurosis, of the modes of approach to the test in a manner parallel with that used in Chapter Seven for the study of normal personality, but certain indications can be given of lines along which information can be sought.

(i) The Time factor

As with all forms of behaviour involving the handling of objects or the carrying out of tasks, excited, depressed, hysterical and obsessional subjects react very differently to the challenge presented by the box and tray and take very varying lengths of time to complete their response.

The Use of the Test

(ii) Subject's remarks

Some subjects talk throughout the whole of the time occupied in their response, either about the pieces themselves and what they are doing, or about their own attitudes to doing the test at all, or about quite other subjects. In the course of such talk a good deal of information can be conveyed as to the subject's attitude to anything he undertakes, his doubts about its rightness, his need of reassurance as to his understanding of the Instructions, his impatience with difficulties and so on.

(iii) Handling of the pieces

There is a very wide range of difference in neurotic subjects in their mode of handling the pieces. Some subjects once having placed a piece on the tray become magnetised by it, as it were, and seem to feel it impossible to reject a piece once it has been taken out of the box. Other subjects, on the contrary, constantly build up small configurations, only immediately to break them up and start on others. With very severe obsessional neurotics who are unable to mobilise their powers to make any response at all, a result can sometimes be achieved through a co-operative effort of subject and tester, the subject taking the pieces he desires to use one by one out of the box and dropping them on the tray, and the tester using the end of a pencil to push them into place. Such a subject can sometimes indicate with a nod where the piece is to go when he cannot bring himself to place it. Similarly when the design is completed certain subjects insist upon replacing every piece taken out but not used in the box again, while others take out handfuls and scatter them on the table around the tray.

(iv) Presence or absence of an emotional relation between the subject and the pieces

In Chapters Two, Five and Ten situations are discussed in which subjects talk to or about the pieces they use, as if these were animate. With neurotic subjects similar situations can arise, but in a less marked and explicit degree. Mildly paranoid reactions can be detected and with good *rappor*t the colours of the pieces can start a chain of associations personal to the subject.

The Use of the L.M.T. in the Study of Neurosis

(v) General qualities of the Design

If the tester possesses an adequate knowledge of the general background of the standard types of Pattern to act as a check, then responses can be compared and assessed upon quite different grounds, such as tightness or looseness of construction, number of pieces used, broken or whole Designs, conventionality or originality of Design, relation of content of Representational Designs to the circumstances of the patient's own life.

One psychiatrist has achieved some interesting results with children through asking the subject if he or she identified with any particular piece and then following out with the child the significance to him of the pieces surrounding this one.*

In all these modes of approach one caution only must be borne in mind and that is that there is a certain suggestive force in the pieces themselves so that certain combinations of pieces come about so easily that they more or less suggest themselves. Unless these possibilities are continually borne in mind, completed Designs may be assessed as presenting far greater originality and skill than is actually present. This danger is far less present in Am- than in Eu-type Patterns.

* Dr Mary Ruddy, London (personal communication).

CHAPTER NINE

THE USE OF THE L.M.T. IN THE STUDY OF MENTAL DISORDERS

By Dr Henri Ellenberger

Illustrations referred to in this chapter in the order in which they occur :

Plates 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137,
138, 139, 140, 141, 142. Figure in text: 15.

1. ORGANIC DISEASES OF THE BRAIN

As Wertham* has already shown, the L.M.T. is an excellent and valuable instrument for use in the differential diagnosis of diseases of the brain from Mental Diseases.

To put this to the test, comparison should be made in a ward for chronic cases where the patients are divided equally between those suffering from brain disease due to senility or arteriosclerosis and those suffering from advanced schizophrenia. There is such a striking difference in behaviour between the patients during their response to the test, before any other examination has been made, that the behaviour itself is often a sufficient diagnostic indicator. There are certain general characteristics in the behaviour of patients with brain disease which make them immediately distinguishable. These are as follows:

As will be brought out later, in contradistinction to patients suffering for instance from schizophrenia, patients with organic brain disease often do not respond to the test. In very advanced organic cases, patients will show no comprehension of or interest in it at all, even if pieces are put into their hands they will only let them drop; whereas

* FREDERIC WERTHAM. *A New Sign of Organic Brain Disease: Stone-Bound Mosaic Patterns*. Trans. Am. Neurol. Assoc., CXCVII, 1937.

The Use of the L.M.T. in the Study of Mental Disorders

with schizophrenics one can almost always get a response to the test, however severe the condition.

If patients with organic disease of the brain respond to the test at all, they will in general carry it out without any interest, as if it were a school task or a burdensome moral obligation. Schizophrenic patients on the contrary almost always take the test as a game and even show obvious pleasure.

Patients with organic cerebral conditions become irritated by the difficulties of the test; and after having completed their response are often left with a sense of failure or dissatisfaction. This attitude is rarely found in schizophrenics who in general when they have finished their Design are satisfied with it.

The essential characteristic of the response of the patient with organic brain disease is the great difficulty, often the impossibility, he finds in realising the *gestalt* that he has in mind. Patients frequently attempt to circumvent this by choosing a very simple form composed of four or five pieces with which success can be achieved, after having failed with a slightly more complicated form.

Wertham has demonstrated that in all the cases of brain disease in which the cerebral cortex has been affected, the same group of characteristics are found in response to the test, whether it be senile dementia, arteriosclerotic dementia, Korsakoff syndrome, general paresis, traumatic dementia etc. Differential diagnosis by the L.M.T. among these conditions is not possible. The L.M.T. can supply more information about the stage and severity of the condition than about its nature. The response to the L.M.T. of patients suffering from these conditions varies as follows:

- (a) In very advanced cases the patient cannot respond to the test at all.
- (b) In less serious cases patients have characteristic difficulties in carrying out the test; examples of these will be given later. In such cases the response is unsuccessful because the subject finds it impossible to realise the *gestalt* which he has in mind.
- (c) In mild cases, difficulties in execution are either hardly apparent or pass off quickly, but a typical and consistent Pattern is obtained. These patients tend to make small Geometrical Patterns, which are often carried out very clumsily. As soon as a Pattern is attempted which is even a little more complicated, the patient will become confused and irritable, and give up the attempt.

The Use of the Test

To appreciate the nature of the response in different patients it is necessary to consider them in some detail, and therefore from a large number of similar cases we will choose a few typical examples.

(i) Cerebral arteriosclerosis

Let us take the case of an old female patient who between 1926 and 1948 was re-admitted eight times for manic-depressive psychosis. On the last occasion the patient exhibited the clinical picture of melancholia. On February 3rd, 1948 an L.M.T. was administered in order to obtain the response of a typical melancholic. We had no reason to suspect any other condition. The response the patient made was as follows:

She attempted to make a hexagon with six equilateral triangles, choosing one of each colour. The first five triangles were chosen and placed correctly: then, instead of a black triangle, she took a black square which she tried to fit in the space between the last two triangles. She saw that it would not fit, but was unable to see why. She then became anxious and disturbed, turning the square in every direction, and ended by leaving it in the space which should be filled by the missing triangle. She saw that something was wrong and tried to correct it by adding additional pieces which she tried to place in a symmetrical relation to the original pieces (these were a red and a blue triangle, a green square, and a white diamond). After about a quarter of an hour she gave up the attempt, though she was plainly dissatisfied (see Plate 124).

Her response to the L.M.T. thus revealed the presence of an organic cerebral syndrome which had remained concealed by the stereotyped complaints and groanings of the patient. She became rapidly worse and died on March 10th, 1948, five weeks after the test. The autopsy revealed the existence of cerebral arteriosclerosis.

(ii) Cerebral atrophy

Another of our female patients, aged ninety-three, had been an inmate for ten years. Her condition was diagnosed as paranoid schizophrenia. She had the delusion that she possessed a large fortune which the government had stolen from her. She was a member of a religious sect, and often made announcements which she uttered in a prophetic tone of voice. Invited to do an L.M.T. the patient said she wanted to make a cross - which, in view of her exalted religious beliefs, did not surprise us. But she could not succeed in arranging the arms of the

The Use of the L.M.T. in the Study of Mental Disorders

cross. When she tried to correct what she had done wrong she only succeeded in making it worse; finally she left a Design which was unrecognisable as a cross. The result of the test led us to suspect that the exalted or paranoid utterances of the patient were nothing more than an empty automatism which concealed an organic affection of the brain. She died of heart failure on October 26th, 1948, a few weeks after the test; the autopsy disclosed the existence of generalised brain atrophy, without any focal lesion observable with the naked eye. (Histological examination could not be made.)

(iii) Cerebral stroke with aphasia

A patient of sixty-seven had already suffered from a stroke with aphasia three years previously. At the beginning of April 1948, she was suddenly struck down with a hemiplegia of the right side, with aphasia. She was admitted on May 31st, 1948. The patient found great difficulty in expressing even the most familiar words. On June 1st, 1948 she was presented with the L.M.T.

She made three Geometrical Patterns on a vertical axis, which she called trees. The first, which was very simple, was successful. The second, which was a little more complicated, was completed with great difficulty. The third consisted of two lines of four pieces, placed vertically and symmetrically two by two thus: two diamonds, two diamonds, two triangles and two triangles. When she came to the second pair of triangles, the patient made a mistake, taking a diamond in place of a triangle. Seeing that she had made a mistake she took away the diamond, put it back in the box, and replaced it by another diamond of the same colour. Once again she saw this was wrong, so she removed it and replaced it with a piece of exactly the same kind. This she repeated five or six times. In the end she became so annoyed with her failure that the test had to be discontinued.

(iv) Traumatic brain damage

A carpenter sixty-six years old was working on a platform when a block of wood fell on his head. He was taken unconscious to a hospital where it was found that the scalp had been injured but there was no fracture. When he recovered consciousness the patient remained in a disturbed and confused state of mind and was therefore admitted to the Mental Hospital of Schaffhausen eleven days later. The confusion and agitation persisted for several days. The L.M.T. was administered a week later. The patient grasped the meaning of the test

The Use of the Test

immediately, chose his pieces with care and set out to make a geometrical figure composed entirely of squares arranged symmetrically both as regards shape and colour (see Plate 125).

Two kinds of difficulty were noticed: (a) a certain disorder in the way the pieces were put together, these being placed one on top of another and right to one side of the tray; (b) the patient made the mistake of putting in two additional green squares. Seeing that these spoiled the symmetry, he tried to correct his mistake by adding two white squares which, to some extent, corrected his original error but produced a further error in symmetry. After a quarter of an hour he finally gave up the attempt and was dissatisfied with what he had done.

A few days later his mind grew less confused, as a result of which the aphasia became evident. The later history of the case confirmed the diagnosis of traumatic brain syndrome.

(v) Korsakoff's syndrome

A woman, born in 1903, who was working in a restaurant and had for several years been indulging in excessive drinking was admitted to the hospital in June 1946 for delirium tremens which passed off quickly. The following year a characteristic Korsakoff syndrome manifested itself with polyneuritis and psychological disorders: disorientation, amnesia, and confabulation which made it necessary to admit her to hospital again. The polyneuritis improved, but the dementia remained unchanged. We have a whole series of Mosaics made by this patient between December 1947 and July 1952, all of which show the same result. The patient makes a small Geometrical Design using about five to ten pieces and with them makes a Pattern which is quite simple and successful. As soon, however, as she tries a Pattern slightly larger or more complicated, she becomes agitated and irritable and attempts to improve the Design without success.

(vi) General paresis

A male worker aged forty-five was admitted on July 1st, 1949 for psychological disturbances initially thought to be due to alcoholism. Examination revealed psychological, neurological and serological disorders characteristic of general paresis. On July 20th the subject was presented with the L.M.T.

The Use of the L.M.T. in the Study of Mental Disorders

First response: The patient picked out several pieces with great care, choosing one of each colour regardless of their shape. He began with a blue triangle which he placed upwards, and then added five other pieces passing from left to right and upwards: a yellow scalene, a green square, a white diamond, and a black diamond. To all appearances he wanted to make a hexagon, for, returning to his starting point (the blue equilateral triangle) and passing this time towards the left he now added a red square and a blue scalene. This occupied six minutes.

But he did not seem satisfied with what he had done, and therefore we at once suggested that he should make another attempt.

Second response: This time the subject took out six equilateral triangles, one of each colour; after a great deal of fumbling he succeeded in making a hexagon.

It is very important to realise that in all cases of organic brain damage it is of advantage to get the subject to make several responses in succession. One can often note modifications which may be due to very different causes:

(a) Sometimes such modifications will be due simply to the difficulty of the Design the subject attempts to make; he may well succeed with a relatively simple Design but fail as soon as his attempts are a little more complicated. This is why, when dealing with a patient whom one suspects of suffering from an organic cerebral syndrome and who succeeds in doing a very simple Pattern, it is wise to ask him at once to do another which is less easy.

(b) Sometimes it is a matter of the patient becoming used to the test in the course of repeated attempts. We have not sufficient experience to say definitely whether or not an improved performance has a favourable clinical implication.

(c) In a series of responses it frequently happens that unexpectedly one response is better than the others, without it being possible to find in this any suggestion of clinical improvement. This is especially true in cases of cerebral arteriosclerosis. The cross made by our patient suffering from the Korsakoff syndrome is another example: it was better than the other responses made by the same patient, though there had been no clinical improvement.

(d) Lastly, improvement in the Mosaics may progress step by step with the cure of the patient, at least in cases of general paresis in which treatment has been successful. For example a paralytic treated

The Use of the Test

by malaria-therapy made a Representational Design after cure, that was carried out with unerring accuracy.

As Wertham has shown, therefore, the L.M.T. often makes it possible to make a rapid and certain diagnosis in cases of doubt, such as for example with patients suffering from aphasia, or from traumatic brain damage (e.g. numbers (iii) to (v) of our cases).

Where a hospital also provides for the nursing of chronic illness, the L.M.T. has frequently made possible the diagnosis of a true dementia (senile or arteriosclerotic) concealed behind stereotyped behaviour exhibited over a number of years by an old schizophrenic or manic-depressive patient.

(vii) Post-encephalitic syndromes

Here, as Wertham has already pointed out, the characteristics of responses to the L.M.T. are different from those in conditions involving the cerebral cortex, and the results are very variable. We are not in a position, as yet, to describe a common syndrome of responses to the L.M.T. in these conditions, but in the few cases we have been able to examine the following characteristics have appeared:

(a) Manual tremor, even if severe, does not prevent the patient from responding to the test; in fact it is surprising to see the accuracy with which such patients succeed in manipulating the pieces. On the other hand, the patient is often hampered, and sometimes completely prevented from accomplishing anything at all, by the impulsiveness of his behaviour; he will sometimes throw himself on the pieces and carry out the test in a kind of frenzy. Sometimes, if he comes up against a difficulty, he will demolish everything he has done with a sweep of the hand, either in order to begin again or to abandon the attempt altogether.

(b) In two of our patients who were distinguished clinically by their extreme impulsiveness, the attraction for them of the colours, particularly the red, was very striking.

(c) On the other hand it is possible for the response of such a patient to be a remarkable example of symbolic self-representation.

Example In a woman of forty-nine, who at twenty-nine had an attack of encephalitis lethargica, post-encephalitic symptoms appeared seven years later and grew slowly and steadily worse. In addition to trembling of the limbs, muscular hypertension, hypersalivation and oculo-

The Use of the L.M.T. in the Study of Mental Disorders

gyric crises, the patient, when we examined her, exhibited certain psychological symptoms, such as impulsive behaviour, irritability, and ideas of suicide with occasional aggressiveness. Having seen us use the L.M.T. with other patients she begged to be allowed to take the test herself and set to work on it with immense enthusiasm. In spite of violent tremors she completed in less than half an hour a figure representing a firework (see Plate 126). Having finished the test she showed an extreme pride in her performance which, in her opinion, proved that she was quite sane. This Design is an admirable symbolic representation of the explosiveness which is the predominating symptom of the patient's illness.

(viii) Epilepsy

Here again no common characteristics have so far emerged. The results of the L.M.T. in epilepsy vary greatly from subject to subject. There may appear, for example, a frame (indicating anxiety), a large number of red pieces (irritability), or black (depression), or Designs giving other similar indications about particular symptoms, but these are not adequate for a differential diagnosis. On the other hand, now and again quite dramatic self-representations can appear, as for example in the case of a female epileptic aged thirty-nine with a very bad heredity (including alcoholics, mental defectives and psychopaths) who made a response of great interest. The design (see Plate 127) completed in four minutes without any sign of hesitation, was of a far higher standard than one would have expected from this patient, who was of sub-normal intelligence and very poor education and had never shown the slightest sign of artistic ability. The patient explained that the design represents a falling star: an irregular red track ending in a curved green tail, which falls obliquely downwards from right to left. Placed by itself in the right lower corner is a small horizontal Pattern composed of two small pieces. It would be impossible to make a better representation of the subjective experience of an epileptic in a sudden attack than to say he is like a man struck by lightning which falls from heaven onto or near him.

This characteristic of symbolic self-representation in Design is still further borne out in the case history of the patient where we find that, in addition to crises and other epileptic symptoms and outbursts of rage, she has had two specific accidents: a serious fall one day when

The Use of the Test

she was shut into a room and tried to escape from the window; and an electric shock when she tried to commit suicide by electrocution.

2. MENTAL DISEASES

(i) Depressive states

In contrast to organic cerebral conditions, a characteristic Pattern for patients suffering from depressive states does not appear. We have found a certain number of individual characteristics of the responses of such patients which frequently appear but are not constant, and none of these specifically characterises a depressive state. Moreover the characteristics shown in L.M.T. responses are the same whatever the cause of the depression: whether reactive depression, depression symptomatic of an organic condition, of melancholy, etc.

The characteristics which are most commonly found in responses made by patients suffering from depression are as follows:

(a) The patients show little desire to do the test; often they will refuse to do so. Nevertheless, this obstacle can often be overcome, either by leaving the patient alone with the materials of the test beside him, or by enlisting the help of his favourite nurse or some other person in whom he has special confidence. The reason for this attitude towards the test is probably to be found in the inhibition of movement characteristic of the depressive. In one case in which the carrying out of the test was accompanied by mounting anxiety, the later history showed that we were dealing with a case of schizophrenic depression.

(b) The patient performs the test slowly without displaying any interest in what he is doing.

(c) One frequently finds a preponderant use of black, or perhaps blue. According to Wertham, predominance of black is characteristic of mental depression only if other colours, however few, are used as well as the black.

(d) Certain designs appear to be fairly typical of depressives: such are lines sloping down from the left to right (a frequent characteristic also of handwriting of depressives); frames with the points turned to the inside; a falling arrow or similar image; the presence of a vertical wall, symbolising imprisonment. This latter characteristic appears still more often in the responses of schizoid patients and autistic schizophrenics.

The Use of the L.M.T. in the Study of Mental Disorder:

Apart from this, responses to the L.M.T. display a wide range of variety, according to the specific personality of the individual, his level of intelligence and other factors which have not yet been studied.

Not infrequently, especially in cases of mild depression, response to the Test simply shows the type of Pattern that we have found to be characteristic of coarctation.

To make these points clear we will cite cases illustrative of depression occurring in different conditions:

Case one: Reactive depression An unmarried woman aged forty, working in an official post, who had given birth to an illegitimate child, found herself in an agonizing situation: she was threatened with the loss of her situation, having been reported for 'moral turpitude'; she was obliged to work hard in order to support both her infant and an old sick mother, and she was ignored or treated with malice by some of her colleagues. Her response to the L.M.T. (see Plate 128) expressed admirably her actual situation. Black was the predominant colour (she saw everything in black): a black wall separated her from the world she found so inhuman; a kind of arrow or aeroplane falling from the sky symbolised the catastrophe that threatened her; the small coloured pattern at the bottom on the right might represent the cradle of the small infant, in danger of being crushed by the imminent disaster.

It is clear that a Mosaic of this kind could not be made by an ordinary depressive: the intelligence and ability of its maker are obvious.

Case two: Mild depression An Italian domestic servant with little intelligence or education had suffered a great many misfortunes. For several weeks she had remained in a state of depression, probably due to inherent disposition (for at least it was impossible to discover any cause for it). The patient was apathetic, silent, motionless and not interested in anything. She made a response to the L.M.T. several days after her admission to the Psychiatric Hospital.

This was an Intermediate Abstract Pattern, the pieces arranged in rows or piled on top of one another, the general axis of the Pattern inclining slightly downwards and to the right. Black and blue were well represented in it but there were as many red pieces as black.

The question then arose whether the presence of this red did not

The Use of the Test

indicate an imminent development of a hypomanic state. This was not so: the depression cleared in a few weeks without special treatment and without any hypomanic attack.

Case three: Symptomatic depression An architect, seventy years of age, with a pronounced schizoid character was admitted to hospital for severe depression accompanied by ideas of ruin, worthlessness, guilt and persecution. These symptoms began at the same time as a pernicious anaemia which had already been somewhat improved by hepatic-opotherapy. The patient carried out a response to the L.M.T. with an air of apathy and languor; he picked out six pieces, one of each colour, and made a small geometrical Pattern which he executed with great care.

It is true that this Pattern by itself gave no indication of depressive symptoms (still less of symptomatic depression). It was a typical 'coarctation' Pattern (in the Rorschach sense). Nevertheless it can be said that a normal coarctated person would have been more likely to place the Pattern in the centre of the tray, and not in a corner close to the edge, as this patient did. Actually the patient reproduced in this way an aspect of his own behaviour: he was generally to be found, by choice, standing in a corridor near the door, ready to buttonhole the first person who entered in order to tell him his woes.

Case four: Severe chronic melancholia One can rarely obtain a response to the L.M.T. from a patient suffering from profound melancholia. But it is not impossible; and we have a mosaic made by one of these patients which is one of the finest in our collection and gives an admirable symbolic self-representation of the mental condition of the sufferer. Unfortunately the mosaic was made on a tray slightly larger than the standard-form, and we are unable to reproduce it. The patient was a woman of fifty-one who had suffered many misfortunes, especially in her married life. Some years before making the response she had begun to see everything in the blackest colours: she declared that she was the most hateful and unworthy creature that existed, that she ought to die a most horrible death, that she had lost everything, above all the greatest good of all: God. When admitted to the hospital she presented the typical symptoms of severe chronic melancholia: she was motionless and inactive, maintained almost complete silence, and had suicidal ideas.

The Use of the L.M.T. in the Study of Mental Disorders

She refused at first to do a Mosaic test. The box and tray were then left beside her and she was invited to use them when she felt inclined. A moment later she started to use the material of her own accord but with extreme slowness and took an hour and a half to accomplish her Design. She made a 'sky' at the top of the tray with yellow and white pieces 'the colours of lights'; but the sky is unstable and appears in places to be falling. At each side, as well as in the left lower corner, were pieces with the points turned inwards (a symbolic indication of the tendency to torment oneself). In the lower half of the tray is a large oblong rectangle composed mostly of squares; black, blue and red predominate without any harmonious effect. The lower line of the rectangle is a short distance above the lower edge of the tray and inclines downwards towards the right. This large rectangle forms as it were the base from which a cross rises; base and cross together resemble an altar with a gloomy funereal appearance: the altar of an abandoned God.

Freud states that the victim of melancholia erects within himself an altar to the object he has lost; in this case the object is none other than God Himself (symbolised by the cross) over whose loss the patient laments. We have here a symbolic representation of the profoundest aspect of melancholia: the introjection of the lost object, the sense of impending catastrophe (the falling sky) and the tendency to torment oneself.

To summarise therefore the knowledge we so far have of the use of the L.M.T. in the study of depressive states. In *Case two* the response merely indicates coarctation, which is a phenomenon by no means confined to Depression.

Finally cases occur where the result of the Test is plainly paradoxical. For example in several cases of severe depression we have been surprised to find the patient produce one day a small Design of undoubtedly agreeable appearance (for example a pretty little red flower) without any external indication of clinical improvement. In at least one case we found this phenomenon to be promptly followed by clinical improvement, but in the majority of cases this is far from being true. We were extremely puzzled by this fact until we found an analogous instance in Kersmann and Schilder's study of the dreams of melancholics* quoted by Boss.

* In a study on the dreams of the melancholics, Kersmann and Schilder found that typical melancholics, even of the most serious degree, had sometimes very pleasant dreams, where they were for instance at home, completely cured, etc.

The Use of the Test

(ii) Manic States

As in the study of states of depression, we have found in the study of manic states no constant characteristics. In mania and manic conditions also a certain number of frequent but not invariable characteristics appear in the responses to the L.M.T., none of which is by itself pathognomic.

The general characteristics of the response of such patients to the L.M.T. are as follows:

(a) Manic patients. These patients generally show great eagerness to do the test. At times they like to be coaxed to do it, but it is then more often a question of playing a game with or teasing the tester. When a patient refuses to respond to the test, showing indignation or suspicion that is not feigned, the presence of schizophrenia is suggested. For example one day the opportunity occurred in the large Mental Hospital of Zürich to examine with the L.M.T. three recently admitted patients who had been diagnosed as manic. Two of them responded with great pleasure. The third refused vehemently and began to adopt a menacing attitude. Later examination proved that this was a case of paranoid schizophrenia which had been at first concealed beneath the mask of mania, whereas the other two patients were genuine cases of manic depression.

Manic patients execute their response to the test fairly quickly, though with care and with obvious pleasure. Often they chatter without pause during the whole test. When it is over, they tend to display great satisfaction and to enjoy being complimented upon what they have done.

Example A manic-depressive woman patient aged fifty-five, after many attacks, both manic and depressive, was at the time of testing in a state of manic excitement.

She began the test with enthusiasm, first taking four triangles which she placed in the four corners of the tray, turning them in every direction before finding the way in which they would fit. She then picked out of the box a large number of pieces which she scattered in the centre of the tray, chattering uninteruptedly all the while. She took the pieces up one by one, examined them and was particularly interested in the colour; for example, on picking up a red piece she said 'This is a colour I used to be fond of'; on placing a black piece and a green piece next to each other: 'These are the colours of Schaffhausen', then: 'I had a dress of this colour' and so on.

The Use of the L.M.T. in the Study of Mental Disorders

The responses of manic patients are generally very colourful with a certain preference for red, though actually black is seldom absent.

The actual Designs made by manic patients vary greatly. Several patients have produced a sort of carpet practically filling the tray (if not altogether doing so) composed of highly coloured Geometrical Compact Patterns. Arrangements of stylised trees have also occurred, growing from the bottom edge of the tray and stretching towards the top with branches springing in all directions.

Example Let us take the response of a man of fifty-two, admitted to the Burghölzli in Zürich, suffering from a manic condition. He was euphoric and talkative, and delighted to do the test. While doing it he talked about having worked as an aeroplane pilot (which, according to the clinical record, is not true), making sweeping gestures imitating the movement of the plane with his hands. He then proceeded to make an aeroplane composed entirely of diamonds. The plane pointed downwards. 'It's a Stuka dive-bombing,' he said. He took less than ten minutes to complete his response and during this time talked about an innumerable variety of subjects. He left exceedingly proud of his performance.

Fifteen days later the manic condition had considerably declined and he was less talkative, with a depressed undercurrent noticeable from time to time. When he was asked to try to recreate from memory exactly the same Design as he had made before he declared that he remembered it perfectly and set to work to do so. In what he produced the general form of an aeroplane with its nose pointing down was recognisable but there were important differences: the wings were smaller and placed further back near the top of the Design; the tail, well defined last time, had disappeared; there was less red and far more black; finally, there was a mistake in symmetry, where a black piece and a white piece were reversed. The whole is far less powerful and dynamic than the former Design.

• It is difficult to imagine a more striking parallel between the abating of a manic attack, and this modification of his Design when the patient attempted to reproduce exactly his former response. Furthermore, the two responses of this patient, and in particular the first, provide an admirable and intimate picture of the subjective aspect of a manic attack. The works of Ludwig Binswanger have shed a great deal of

The Use of the Test

light on the actual phenomenology of manic states. The patient lives in a space which to him appears open on all sides, through which he moves easily without obstacle; he lives in haste, in eagerness, in a whirl. The world is without weight, full of light, colour, *joie de vivre*; all the clinical symptoms of the manic patient are explicable in the forms of his specific subjective experience of leaps and bounds, and of flight in an infinity of light*. This is exactly what the patient has managed to express with the symbol of the plane in his first response to the L.M.T.; the Stuka whose leaps, falling and climbing movements he imitated with his hands while doing the test.

(iii) Manic-depressive psychosis

In order to show how the L.M.T. can help us to understand the changes that take place within the manic-depressive patient, we give an account of two responses by the same patient at an interval of three weeks, i.e. at the end of a hypomanic attack and at the beginning of the attack of depression which immediately followed it.

A domestic servant aged forty-six, more or less schizoid in type, who had already had a large number of attacks of hypomania or depression was, in February 1952, in a state of hypomaniacal euphoria. Having observed us administering the L.M.T. in the room for several days, she demanded an opportunity to do one herself. She began the test with pleasure and did it with great joy (see Plate 129). She made a tree with a large trunk and large black branches crowned with an abundance of green. At the bottom, on each side of the tree, she placed a few green pieces which she said represented grass. She was clearly extremely satisfied with her performance, especially when her Design was taken up and copied. She called it 'A Tree of Life'.

It is clear that this is an example of symbolic self representation, and the question arises as to what this idea of 'The Tree of Life' means to her, since *Lebensbaum* is a word which is very little used in the German language, and which could hardly have come from anywhere but the Bible, which the patient reads assiduously.

In poetry, a tree represents not only power and solidity, but vital expansion, union with the life principle. (See, for example, the poem

* LUDWIG BINSWANGER. *Ueber Ideenflucht*, Zürich, Orell-Füssli, 1933, *Ueber die manische Lebensform*, Schweizerische Medizinische Wochenschrift, volume 75, 1945, No. 3, pages 49 to 52.

by Francois Mauriac – *Le corps fait arbre*). Our patient has, however, not called her work 'Tree' but 'Tree of Life'; and the question is, what does this symbol represent for a devoted reader of the Bible such as this patient? According to Proverbs, a tree of life is wisdom (III, 18), justice (X, 30) and above all satisfied desire, that is to say, the opposite of frustration. 'Hope deferred makes the heart sick but the wish come true is a tree of life' (XIII, 12). Further, in the Apocalypse, the tree of life heals the nations (XXII, 2) and produces twelve harvests a year (our patient had just begun the menopause).

Thus this Mosaic Design, in so far as it is a symbol, represents the expansiveness of the euphoric state, the satisfaction of all the desires which in this patient had been frustrated in the course of her life, and the healing of her complaints. But the Pattern has still to be analysed from the point of view of its formal structure. From this point of view, the abundance of black is striking, not only in the trunk but in the two large branches on the sides which seem to bend beneath the weight of the foliage. These are depressive elements which may warn of a turn towards the phase of depression. Furthermore the green pieces around the tree are like a hillock or rise of ground which isolates and increases the apparent height of the tree, a feature which we have found in schizoid or autistic persons*.

Three weeks later the whole clinical picture was changed. The patient had passed little by little into a depressive phase: she felt herself to be ruined and worthless, to have wasted her life, to be guilty with regard to her family and in the sight of God. She then made another response, working reluctantly, slowly and with difficulty. The Design she made this time she called 'A flower' (see Plate 130). It is a gentian, an alpine flower which must struggle to exist in a cold environment and a thankless earth. The stem is bent beneath the weight of the flower, which seems to sink in on itself, with blue as the predominant colour – a colour which often predominates in the responses of those who are depressed. At the end of the test the patient was not proud of what she had done, and declared that she did not think her picture beautiful.

Thus the state of expansive euphoria has given way to the grievous turning in on oneself of a depressive phase.

* The same is true in the Tree Test. See KARL KOCH: *Der Baum-Test*, H. Huber, Bern 1949, page 52.

(iv) Schizophrenia

It is in the study of schizophrenia that the L.M.T. has yielded by far the most interesting results, and for the following reasons:

(a) All schizophrenic patients – or practically all, even including the most catatonic, the most negativistic and the most agitated – will respond to the L.M.T. This is one of the greatest advantages of the L.M.T. Faced with patients who have not spoken a word, who have done nothing and have not moved for years, it is evident that the best tests in the world, such as the Rorschach, the Szondi or the T.A.T. are inapplicable. At those times when speech, drawing, or other tests fail, the L.M.T. will provide a means of approach to the patient.

(b) The L.M.T. furnishes an unparalleled means of study of such conditions. When in a ward of chronic cases one carries out a series of tests with the L.M.T. one has the impression of a whole world opening up before one. Where one saw before only a crowd of more or less identical psychotics, the whole prospect lights up and becomes differentiated, each patient reveals his inner state and the exact degree of his regression, while in many patients characteristics come to light that have been hitherto unsuspected. Sometimes one is surprised by what emerges and forced by it to revise a clinical diagnosis and to substitute one which offers new possibilities for psychotherapeutic treatment.

(c) In addition, the L.M.T. often makes it possible to establish contact with previously inaccessible patients. Certain patients, profoundly autistic, make their satisfaction known at having this means of communicating with the physician. In a ward where one carries out a series of tests, it is striking to see after a short time the interest which the test arouses in the most severely autistic and negativistic patients, some of whom will even go so far as to demand their turn to do the test.

(d) One must point out that in using the L.M.T. with regressed schizophrenic patients, certain modifications of technique must be made. In such cases, the test should be carried out in the ward in which the patients are to be found, even on the exact spot in the ward which they usually occupy, and not in a special examining room. Care should be taken to see that the neighbouring patients do not observe the test too closely, so that they may not be influenced by it. Often it is necessary to establish a preliminary contact with a patient before beginning the

The Use of the L.M.T. in the Study of Mental Disorders

test, perhaps enlisting the assistance of the patient's favourite nurse or whatever person may have the most influence over him. It is obviously impossible with the seriously deranged patients to follow the official instructions word for word; there are cases in which it will be found necessary to present the patient with a limited choice of pieces, and to place these outside the box within his reach.

(e) Finally, as we shall see further on, the L.M.T. often makes it possible to discover clues in regard to treatment of such patients.

It might be of interest to point out that in spite of predictions to the contrary in the course of five years of examining several hundreds of mental patients, we have not had a single instance of any piece of the material having been lost, swallowed or destroyed.

It seems that the attraction exerted on regressed schizophrenic patients by the L.M.T. is due largely to the bright qualities of the pieces themselves. It is probable that these have the same effect upon schizophrenic patients as on young infants who remain indifferent to pieces of wood or cardboard of the same size and shape and colour but who are immediately attracted by the shiny quality of the pieces of the L.M.T.

3. THE L.M.T. AND SCHIZOPHRENICS

In a study of the L.M.T. by Wertham and Golden*, the following were found to be characteristic of the Designs of schizophrenics: 'Over emphasis on formal principles of organisation, such as symmetry and repetition, exaggerated symmetry (termed by Wertham "super-symmetry"). The Designs are usually abstract, or – if concrete – unrealistic and vague. Colour is unrealistically used, often disregarded and used indiscriminately. Emphasis is more on form than on colour. In advanced and deteriorated cases, scattered incoherent jumbles, only rudiments of organisation.'

These findings of Wertham and Golden are surely often seen, especially in borderline cases, but they are by no means pathognomic, or even typical. Sometimes schizophrenics (especially hebephrenics)

* FREDERIC WERTHAM and LILI GOLDEN. *A Differential Diagnostic Method of Interpreting Mosaics and Coloured Black Designs*, Am. J. Psychiat., XCVIII, pages 124-131, 1941.

The Use of the Test

show an astonishing disinterest in symmetry. The use of colour is often excellent, especially by paranoids, who display sometimes a good and lively phantasy and a creative ability. Therefore it seems not warranted as yet to use the L.M.T. as a means of differential diagnosis, especially not as a 'blind diagnosis', but rather for the further investigation of a patient whose diagnosis is already known.

In our investigations, we have concentrated on two factors:

The manner in which regression in schizophrenia appears in the responses to the L.M.T.

The existence of correlations between certain Patterns in the L.M.T. and certain limited diagnostic groupings.

Degrees of regression in schizophrenics The comparative study which we have made between the responses to the L.M.T. made by severely psychotic patients whose illness is due to profound organic brain lesions and advanced cases of schizophrenia, has demonstrated that we are dealing with a process that is essentially different in the two cases. In the case of organic brain syndrome, it is a question of *actual* deterioration, i.e. of the destruction or deterioration of definite functions. In the pseudo-dementia of schizophrenia, we are dealing with a regression to previous stages of development. This is why it is possible to a large extent to compare the responses of advanced schizophrenics with those of very small children, a thing which is not possible in cases of organic deterioration.

Four degrees of regression can be distinguished which we shall now describe, beginning with the most extreme and proceeding to those of lesser degree.

Fourth degree We are here concerned with the most regressed cases of schizophrenia, those of a vegetative way of life. These patients, at one time very numerous in hospitals where Occupational and Active therapy were unknown, remain in bed all day, completely inactive and usually speechless, in a state of apparent idiocy, incapable even of feeding themselves or taking care of their most elementary needs. In short, they have regressed to the state of the suckling, or, to the 'oral' stage. There is a striking resemblance between the way in which these patients respond to the L.M.T. and that of infants of sixteen or eighteen months. Frequently the patient cannot take the pieces out of the box and it is necessary to show them to him and to leave them close

at hand. The patient looks at the pieces with interest, plays with them, puts them in his mouth, drops them, and sometimes, though more rarely, he may by chance move the pieces on the tray, but always haphazardly, rather like a little child scribbling with a pencil.

Here are some examples:

Example one A woman patient aged forty-eight, who was admitted at the age of twenty and had not since left the hospital, revealed at times ideas of grandeur and of persecution, hallucinations, and periods of agitation. For the last ten years she has remained motionless in the same stooping attitude without speaking and has had to be fed with a spoon like a baby. Sometimes she smears herself with her excrement.

Administration of the test. The box was first shown, open, to the patient: she looked at it without taking anything out. A few pieces were then offered to her. After a moment she took one piece and put it in her mouth, then she held it for a little while in her hand without looking at it. The tray was shown to her, and after a moment's hesitation, she put the piece on it. She did the same with a second and then with a third piece, which she also placed haphazardly on the tray. When the fourth piece was offered she made no response, and the test was brought to an end. All this occupied thirty minutes.

Example two Woman patient aged fifty-nine. Admitted at the age of nineteen, she has since not left the hospital. It seems that her condition deteriorated rapidly. For more than twenty years she kept to her bed or her chair where she has remained in a fixed position. For over ten years she has been fed with a spoon. Stereotyped movements of the hands, incontinence of urine and faeces, and self-soiling are present. She speaks only a few isolated, often incomprehensible, words.

Administration of the test. The box was shown, open, to the patient, who put out her hand as though to pick up something, but apparently found the action too complicated for her. A piece was given to her which she took, looked at with interest, played with for a moment, then put on the tray. She took a second, then a third piece, placing them haphazardly on the tray. In the end she put down ten pieces in a quarter of an hour. After the test was concluded, it was seen that the patient was quieter and her stereotyped movements had ceased.

Second test: Two days later, we began again. The patient seemed to recognise the tray and box without difficulty; she picked up the pieces that had been placed on the lid of the open box one by one. She played with them and placed them haphazardly on the tray.

The Use of the Test

Example three A woman patient aged sixty. Psychological disturbances became manifest when the patient was about eighteen. Admitted at twenty-six, she has not since left the hospital. For over twenty-five years the patient has remained in the same position of catatonic immobility, whether lying on her bed or sitting in a corner; she has had to be spoon-fed; her sole occupation consists of spitting all round her. She repeats what is said to her, but practically never speaks a word of her own accord. She is incontinent of urine and faeces.

Administration of the test. The patient looked attentively at the box, and after being shown how to pick up the pieces, succeeded in doing so by herself. When taking the first piece she asked 'Ist Zucker?' (is it sugar?), but did not put in her mouth. She then put the pieces on the tray one by one, haphazardly, after being shown how to do it. Becoming communicative, she started singing nursery rhymes, beating time with her hands.

There would be no point in multiplying such examples. What characterises these patients is the way in which they respond to the test: their attitude is one of interest, sometimes astonishment at the pieces, which they look at, turning them over and over, putting them in their mouths, and the fact that they place the pieces on the tray without any attempt at spatial arrangement. The less regressed patients of this group get as far as playing with the pieces on the tray.

The spatial sense of such subjects is evidently profoundly disturbed. Observation has constantly shown that they are incapable of comprehending pictures. If these are placed before them, they may regard them mechanically without their expression betraying the smallest interest. On the other hand, it is easy to establish communication with them by means of singing. If one sings them a little nursery rhyme that they knew before they became ill, they will go on repeating it and making the kind of movements one makes to such refrains. We have seen other patients in a similar condition who are in the same ward follow the movements and sing as well. It is useless to attempt to communicate with such patients by words; they seem only to understand the tone of the voice, with perhaps a word here and there. They appear to have regressed to the level of an infant who is learning to speak. This is probably the real significance of echolalia.

Third degree These are cases of schizophrenia which are somewhat less regressed and, in the terminology used in Swiss mental hospitals,

The Use of the L.M.T. in the Study of Mental Disorders

are cases of schizophrenic dementia. There is however one essential difference between them and the preceding group: they are not 'sucklings' but 'little children', capable of getting up, walking about, eating unaided, and even of occupying themselves, in however fitful and momentary a way. These patients do not express themselves in isolated words but in phrases, though it is rarely possible to converse with them beyond a few questions and curt answers.

With regard to the L.M.T. the difference between these patients and the preceding group lies in the spatial distribution of the pieces they use. These patients can play with the pieces, but when they place them on the tray they arrange them so that each piece stands by itself, and they place the pieces deliberately. Apart from this, they make no choice of colours and no attempt at organisation or construction of figures.

Example A woman patient aged fifty-six who came from a family of schizophrenics, worked as a kitchen maid in a Mental Hospital, where she afterwards remained her whole life as a catatonic patient. She had several attacks with delusional ideas and hallucinations and had been an in-patient for the last five years. This patient could dress, perform her toilet and eat without help, and could even lend a hand occasionally to hospital employees, but she would not do regular work. She spent most of her time walking about without doing anything. It was possible to talk to her for a moment, but she could not carry on a connected conversation. Occasionally one came across traces of her former delusions.

Administration of the test. She responded to the test with interest and pleasure. She took pieces from the box, apparently at random, and then placed them on the tray, choosing each position carefully (see Plate 131). She put one piece along one of the edges, others in the four corners, others scattered singly about the tray. She then took some breadcrumbs and placed them on four of the pieces. She was very satisfied with the result. Time a quarter of an hour.

It is easy to convince oneself that unlike the former group, these patients have a well organised sense of space. One can show them pictures, and even turn over the pages of picture books with them, as with little children.

Second degree The essential difference between these patients and

The Use of the Test

those of the preceding group, is that patients of the *Third* and *Fourth* degrees no longer belong to the schizophrenic world: they have escaped from their illness and taken refuge in the return to infancy – the suckling stage (*Fourth degree*) or that of the small infant (*Third degree*), where they live in a state of euphoria and are free from delusional ideas (and to all appearance from hallucinations). Patients of the *Second degree* still live in the world of psychosis. They suffer from delusions and hallucinations, not in the form of barely perceptible traces, but as the actual stuff of their life. They have also a much richer range of emotions: anger, joy, and anxiety. But this schizophrenic world is a dissociated world. These patients live, as it were, in fragments. It is impossible to have a real conversation with them. Both in their attempts at conversation and letter writing they are able to produce only fragmentary ideas and phrases. Just as their work itself is fragmentary, they sometimes hoard collections of bits and pieces of paper, string or thread. Even their delusional ideas are incoherent and fragmentary and can only be understood after a long process of reconstruction.

In regard to their response to the L.M.T., their essential characteristic is fragmentary organisation. The pieces are no longer placed singly in the tray, but more or less in groups, not pushed at random one against another but placed to a certain extent in relation to one another. This fragmentary organisation can take several forms. The most frequent are:

- (a) a series of pieces placed two by two across the tray;
- (b) chains of similar pieces going across the tray;
- (c) groups of fragments.

Example one Woman aged sixty-seven. The first obvious symptoms of her illness, headaches followed by ideas of persecution and hallucinations, occurred when she was twenty-four. She has been an in-patient for the last forty-one years. She expresses incoherent delusional ideas in a language incomprehensible to anyone but herself, helps with the simplest form of housework, and collects bits of material and clothing which she hides in her bed.

Administration of the test. The patient took some yellow and black triangles from the box and placed them side by side in pairs (see Plate 132), two yellow, two black, or a yellow and black. (She once put a white triangle in place of a

The Use of the L.M.T. in the Study of Mental Disorders

yellow, probably because of short sightedness). She carried out the test with pleasure but very slowly.

Example two Woman aged sixty-four. Admitted at thirty-eight for paranoid schizophrenia with delusions and vivid hallucinations. She has been an in-patient for the last twelve years, during which period, the schizophrenic dissociation has become greatly aggravated. She expresses incoherent delusional ideas which are almost unintelligible, with ideas of persecution predominating. She seems to hear voices; scribbles incoherent letters in pencil and slips them into the pockets of the doctors. She carefully collects crumbs of bread, bits of chocolate etc, which she then hides in a rag. Occasionally she helps the personnel with great zeal, but generally does nothing at all.

Administration of the test. The patient took a whole pile of diamonds from the box, without regard to their colour, and made with them two long lines across the tray; with this she was satisfied (see Plate 133). To the question – ‘Does that represent anything?’ she answered, ‘I wanted to make a bed.’ Time taken five minutes.

Example three Woman aged sixty-five. First obvious symptoms of character and behaviour disorders appeared when she was twenty-seven. After several attacks of schizophrenia she was finally admitted to the hospital eleven years ago. She mutters incomprehensible words and has periods of agitation, probably connected with hallucinations. In her calmer periods she helps to clean vegetables, working with meticulous care and cutting even the rotten parts that are thrown away into very thin even slices.

Administration of the test (see Plate 134). The patient hesitated for some time in front of the box, looking at it without moving. Then she bent over it abruptly and haphazardly seized a number of equilateral triangles and deposited them quickly on the tray. Then she paused a moment, touched the pieces without moving them, abruptly seized some more – and so on, several times. The pieces were placed in a certain order, e.g. the red triangles were made into a rough hexagon, and the green were carefully put in a line. The whole formed a typical set of isolated groups of fragmented figures occupying the lower left quarter of the tray. Time twenty minutes.

These three patients exhibit very similar clinical symptoms, and obviously belong to the same clinical group. A patient of this type occasionally makes a response which is characteristic at one time of

One group and at another time of another group, and then one which is a mixture of all these types.

Obviously, to communicate with these patients, one needs different means from those employed with the *Fourth* and *Third degrees*. Contact can be made with them by means of games, provided that these are very simple and require a minimum of verbal explanations. But one cannot get very far with them by means of words.

First degree The essential difference between these patients and the former groups is their coherence, as opposed to the incoherence or complete dissociation of patients of the *Second degree*. Patients of the *First degree* belong to the world of language, and it is possible to hold a connected conversation with them. Their delusions are coherent and ordered, even if this coherence and order are not exactly typical and if the ideas are absurd from the point of view of common sense.

In their response to the L.M.T., these patients are able to create an organised Pattern, in the general sense of the word, in which, whether Compact or Scattered, organisation is recognisable.

If we have already found three different types in the *Second degree*, there are certainly many more in the *First degree*, and there is still a great deal of work to be done on this subject. Some of the varieties will be described later. Here it will be enough to indicate the type of response most often met with among Swiss patients. This is a Compact Geometrical Pattern, symmetrical in form and colour (though patients occasionally commit the most glaring faults of symmetry). As Wertham well says, there is 'an emphasis on form rather than on colour.' The total effect is often discordant and unpleasing.

Example one A woman aged fifty. For twenty years she worked as a domestic or chamber maid, and constantly changed her place on the most flimsy excuses. At thirty-five, she became more and more occupied with religion, and refused to work on the ground that God had destined her for something higher. She was therefore sent to the workhouse where it was realised that she was psychotic. Since then, she has been several times in a mental hospital with paranoid delusions with a preponderance of mystical ideas: she spends most of her day studying the Bible, and for weeks at a time refuses to eat 'at the command of God'.

The Use of the L.M.T. in the Study of Mental Disorders

Administration of the test (see Plate 135). She first made a hexagon with white triangles, then added some black triangles, filling in the empty spaces with green, red and yellow triangles, the whole forming a large hexagon. Then, at the lower left corner of the tray, she added a Fundamental Diamond Pattern composed of red, black and yellow diamonds. She was fully satisfied with the result, although the general effect was anything but harmonious.

It will be noted that the larger Pattern has a white centre; we have found this a frequent characteristic of patients whose ego (in the psychoanalytic sense) is weak, and it often indicates their internal emptiness. 'Over-emphasis on form rather than colour' is a characteristic of introversion. The fact that the subject, after completing the Pattern, feels impelled to add another smaller one in the corner of the tray seems to be typical of perfectionist individuals, just as the perfectionism of this patient has in actual life frequently led her into difficulties, taking her first to the workhouse and then to the mental hospital.

Example two A woman aged forty-three, of low average intelligence, born and brought up in a Central European country. Her present illness began when she was repatriated to Switzerland in 1945. She had been a patient several times in a mental hospital. Her symptoms were of pure schizophrenia in the sense that she suffered from no hallucinations or confusional ideas. At first sight, she gave the impression of being normal, and she expressed herself clearly and with liveliness, and not without a certain charm. It was some little time before it became clear that it was all completely empty chatter. She is in fact just the kind of patient whom a visiting journalist might regard as a victim of 'arbitrary internment'. She spent the whole day in futile occupations with no goal and no meaning except as an excuse for her empty chatter. She was entirely incapable of any social contacts.

Administration of the test. The patient enjoyed doing the test. She made a Fundamental Pattern of diamonds, placing the colours in this order: white, red, green, red, white, red, green, red. She then added some more diamonds, black and yellow alternating. The whole effect was inharmonious and unpleasant, but probably little different from that which is sometimes produced by normal individuals with very little aesthetic sense.

It will be clear to anyone with experience of schizophrenia that the four degrees described above are only schematic types. In actual practice, one frequently finds intermediate examples between each grade.

There are in addition to these groups certain recurring types of res-

The Use of the Test

ponse which appear regularly and which we shall now discuss.

Before doing so, however, let us consider the way in which the L.M.T. is able to throw light upon what we may call the schizophrenic way of life. An old paranoid schizophrenic who has a complicated delusional system is asked to perform a Mosaic Test and declares that she will represent a cat – her favourite animal. From the box she chooses the mosaic pieces carefully and performs the test with great care. After she has made her cat, she declares that she has finished, and she is very satisfied with her performance (see Plate 136).

One does not need to study much zoology to see that this animal shows only a remote resemblance to the cat that we know. But that does not disturb our patient: she explains to us that here is the head,

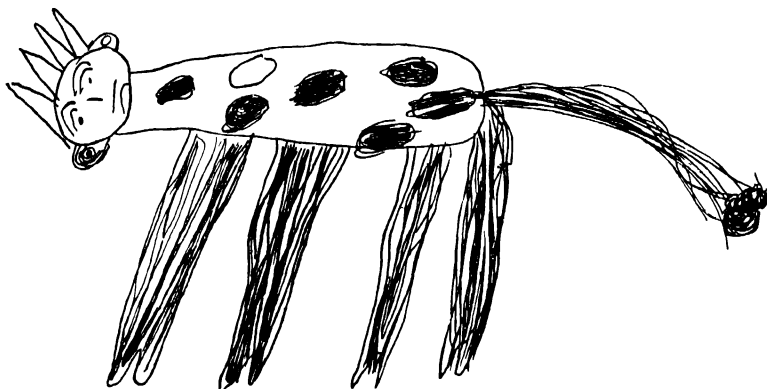


Figure 15: Drawing of a cat by schizophrenic patient

here the tail, here the body and here the paw. At our question: 'Where are the three other paws?' she answers, 'It is not necessary to represent them, they are exactly the same as this one.' Now here is a strange thing. The patient is able to draw fairly well; so we ask her to draw a cat and she draws a cat that is recognisable, and among other details, possesses four paws (see Figure 15). Comparing the Mosaic and the drawing we find that a patient who is perfectly able to draw a cat, makes a mosaic cat which resembles anything but a cat, that she knows this perfectly, but does not mind it in the least. This, I think, is a typical schizophrenic symptom that might be called the 'indifference to the *gestalt*'.

4. CORRELATIONS BETWEEN CERTAIN TYPES OF RESPONSE TO THE L.M.T. AND CERTAIN CLINICAL GROUPS OF PATIENTS

Our researches on this point are only in their beginning and the following description should not be taken as giving more than preliminary indications intended to serve as a basis for further research.

(i) The Story Reaction

An account of this reaction has already been given in Chapter Two, page 58. In it the patient accompanies the making of the Mosaic with a story in which each piece of the mosaic is an episode or an element. This is not to be confused with the behaviour of the manic patient who babbles to himself as he does the test and sometimes says whatever comes into his head about a certain piece of a certain colour (see above page 252); nor with that of certain paranoid schizophrenics, who, after they have completed the Design, proceed to invent a complicated explanation of it. In the type of case now under consideration, the patient uses the pieces to build up a little scene of which he tells the story or gives a description. One should not look for any complicated meaning in this story; it is only a game, like the little stories nurses tell to small children as they show them the fingers of a hand one after another, making each of them represent a different person, each of whom plays a distinct role in the story e.g. 'This one (1) saw it. This one (2) caught it. This one (3) skinned it. This one (4) cooked it. This little rascal (5) ate it up.'

Example one A woman aged fifty-eight was the daughter of a brutal and perverse alcoholic and has had a very hard life. A widow with three children, she had to work from 6 a.m. to 9 p.m. to support her family. When she was about thirty-three the first symptoms of psychosis began to appear. Since she was thirty-eight she has not left hospital. As a patient she is at times aggressive and suffers from hallucinations, but her most marked symptom is dissociation. She is inert, and wanders about the whole day muttering unintelligible words, often in rhyme. For example, she one day walked in the hall stopping in front of each person saying: 'Viele Städtchen – viele Mädchen.'

Administration of the test. She took squares of several colours and placed

The Use of the Test

them one after another in an irregular line gabbling all the while an incomprehensible story in which one of the pieces – a red square – was named 'the warrior'. When requested not to talk so fast, she took a second set of squares which she placed again in an irregular line. She called two blue squares in this line 'Hope' and 'False Love Blue' respectively; a yellow square she called 'Primrose', and a black 'The Devil is inside'.

It should be remarked that the last named comes from a nursery rhyme *Grübchen auf dem Kinn, Der Teufel ist drin*. The reader will see the patient was making up a story connected with the colour of the pieces she was handling; this story was as incoherent as every other she recites in the course of the day, but nevertheless has a sort of rhythm similar to that of counting or nursery rhymes.

Example two A woman aged fifty-nine; born in a mountain area in the centre of Switzerland and abandoned by her family. The history of her illness is not known. When admitted to the Schaffhausen Psychiatric Hospital thirteen years ago, she was already in a condition of advanced schizophrenic dissociation. She spends the whole day cleaning, and as she does so, she pours out a stream of incoherent words, rendered still more incomprehensible by her accent and her lack of teeth. She hears voices and points to people she sees in the clouds, in the foliage and so on.

Administration of the test. She did a mosaic with great enjoyment, of the Collective type. Each of the isolated groups of pieces was given a geographical designation: 'Glarus and Herisau, Bern and Zürich' (four Swiss towns) followed by smaller places 'Luchsingen – Gonerwald', then 'der Grüniger von Honeffers' (probably the name of a mountain near her home), 'Hinterland' and finally – as she placed the last pieces – 'That is my home'.

It will be seen that this is not simply a picture of a locality, more or less imaginary; the places she notes are those which played a part in her own life, though unfortunately we know little about the events or connections; Glarus and Herisau are towns in which she lived just before she went into the hospital and they are followed by references to the places where she spent her youth and early childhood, ending with the family home. The response to the test is thus a representation of her own life history, traced backwards, and might be called: 'The return to one's birth-place.'

Example three A woman aged eighty-five spent a period in the hospital at the age of twenty-one for schizophrenic symptoms, and re-

mained 'peculiar'. When admitted to Schaffhausen hospital at the age of seventy-two, signs of brain deterioration were present with unmistakable symptoms of schizophrenia. She indulged in long monologues in which she seemed to tell herself stories and would play for a long time with her fingers, absorbed in her own blissful dreams.

Administration of the test (see Plate 137). The patient picked up some half squares which she placed two by two, without regard to their colour, explaining that she was designing 'a small room' (*Stübli*). In the centre was a table in green; to the left a piece of furniture (red and white); to the right the door (red), complete with a handle to the right again. Above in red and yellow was 'the place where you hang the linen'. Below in the centre was a kitchen (blue and black). (By now the patient had evidently forgotten that she set out to make a room — it had turned into a house!)

It is worth noting that the Pattern was put in the lower left corner of the tray, very much in the attitude of the patient herself who is in the habit of sitting on a chair in a corner of a room; and that at the top of the Design she committed an error in symmetry, putting an isosceles triangle instead of a half square.

These three Mosaics fall into each of the three types we have described above under the *Second degree*. In each of them we have subjects suffering from dissociation, living in fragments; one may indeed suppose that the story is not merely a game but at least in certain cases an attempt to overcome the dissociation.

(ii) The Delusional Dissociated Reaction

In certain expansive paranoid patients, a type of response appears that has been described in Chapter Two as the Delusional Dissociated Reaction. Such patients make a series of Patterns: geometrical figures, Fundamental Patterns, or small Representational Designs, highly coloured, and then proceed to explain what these figures signify to them, the meaning being closely related to the patient's main delusional ideas. These patients are not autistic like the subsequent cases, but are extremely communicative and always ready to relate their manic ideas.

Example one A woman aged fifty-eight was the illegitimate child of a prostitute and brought up in educational establishments. She then worked as a servant in a restaurant and had numerous dealings with the police and the courts. She was twice accused of deliberate arson,

The Use of the Test

but was acquitted for lack of proof. In addition to having several illegitimate children, she had married three times. When she persecuted one of her former husbands, sending him threatening and blackmailing letters, she was brought before the magistrate who had her examined by a psychiatrist. A hypomanic and mythomaniac psychopathic condition was diagnosed. Some years later her disease reached a critical stage and she was interned for good as a paranoid schizophrenic. The patient then occupied herself with useful activities, devoting the rest of her time to a study of the Bible and of religious pamphlets. She presented an inextricable confusion of mystical and megalomaniac ideas. She frequently had visions in which she saw Heaven opened, and received communications from Jesus Christ and the Angels. These revelations concerned world events as well as little incidents of her life in the Mental Hospital. She insisted that the Senior Resident was her son, and that the chief nurse was the Beast of the Apocalypse. She wrote frequently to the Mayor of Berlin and to President Truman to give them advice and exhortation.

Administration of the test (see Plate 138). She began by doing two Fundamental Patterns with diamonds in the upper part of the tray. She then did five more Fundamental Patterns: three hexagons and two squares. The whole Design was done very rapidly, without regard to the position of the Patterns; but the colours were chosen carefully. The time taken was five minutes. The patient then said that the two upper figures were stars and the others coats of arms.

One can see here both her mystical ideas (the Heavens) and earthly ideas of grandeur (the Nations).

Example two A woman aged forty-seven, the daughter of a brutal alcoholic, had an unhappy childhood and later suffered from prolapsus uteri, then from Grave's disease. After removal of her goitre, she had tetanic crises followed by abdominal troubles, whose precise nature is not known; finally mental symptoms appeared with signs of melancholia. The patient, whose marriage had also been unhappy because of her pre-occupation with religion, became a member of a very strict and rigorous sect. She had been a patient of the Institute continuously for the last eight years. Soon after her admission the depression disappeared and gave place to a state of exaltation. She had numerous visions and communications from on high. Two or three years later,

The Use of the L.M.T. in the Study of Mental Disorders

symptoms of megalomania appeared which gradually became pre-dominant without altogether displacing the former condition. She was now a queen, an empress, had studied at all the universities, travelled in all countries and was the wife of President, Truman, the mother of Princess Elizabeth and the King of Greece, and so forth.

Administration of the test. She made a series of geometrical figures, fairly well separated, which she called 'Coats of arms', then a comet and a star which she called 'the star of Bethlehem'. Time taken, ten minutes. Here too, mystical and megalomaniac ideas are symbolically represented in the test.

These two examples show how astonishingly alike the mosaics made by two clinically similar patients can be. Other paranoiacs express in their Designs not so much their manic ideas as their complexes and chief preoccupations.

Example three A woman aged sixty. As a small child she was remarkable for an extraordinarily dominating and unsocial character. Later she worked as employee in an office and showed herself extremely meticulous and conscientious in her work, but over-sensitive and difficult to get along with. She married at thirty years of age, and immediately showed herself quite incapable of running a house; she did her work so slowly, checking and verifying everything so often that she never reached the really important tasks. As she let her 'work-debts' (to use her own expression) accumulate, her husband and his sister became obliged to help and, for example, had to do all the washing. She would never admit that she was at fault and always blamed others and displayed a morbid suspicion of her neighbours. She made an incredible collection of odds and ends; pictures of chocolates, used matches, hundreds of empty cheese boxes and the like. Ideas of persecution became so aggravated that she had to be admitted to the hospital several times, and finally for good.

Administration of the test. The patient made her response with interest, particularly, it would seem, in order to show that she was perfectly sane. She began by using the squares to make a staircase in the right lower corner of the tray. In the middle of the staircase a kite rises into the air. In the upper right hand section, a yellow geometrical shape was the sun, she said. Below, in the centre, to the left of the staircase, she placed a Swiss cross on a red base; in the left upper section a yellow and white flower, and right at the top several decorative pieces. The patient explained the mosaic as follows: "The Swiss cross is there to show that I am patriotic. The staircase is the one by which I go

The Use of the Test

down to my garden which I am so fond of. The flower is a narcissus in my garden. The decorative motif is a piece of embroidery; it shows that I do it willingly. The kite (*drache*) reminds me that they used to call me the *Drache*, i.e. an intolerable woman, which is quite untrue. The sun represents my daughter who is, as it were, the sun of my life'.

Comments: (1) Staircase and flower: the patient, instead of attending to her work, wasted all her time in the garden attending to her eighty-four pots of flowers. (2) Kite (*drache*): a play on words, 'quarrelsome housekeeper'; an accusation she had heard many times, with good reason. (3) Sun: represents her daughter whom she tyrannizes over, on the pretext of loving her, to the extent of making her life unbearable. (4) Embroidery pattern: one of her favourite occupations; she starts pieces of work without ever finishing them, an example of her vain and futile way of occupying herself. We may note the strong tendency to justify herself which comes out in her explanations.

(iii) The autistic circle

A third recurring type of Design is one in which the patient arranges the pieces of the mosaic in the form of a circle. This is generally regular, completely closed, and hollow in the centre. So far, five of our patients have made this pattern. All five were strongly autistic schizophrenics, but not all of them were catatonics. They sometimes behaved as catatonics, sometimes as strongly autistic paranoids.

Example one Woman aged sixty-one. Apathetic by nature. Although she was married and a mother, one of her aunts, who lived with her, actually ran the house. When this aunt died, the patient began to show symptoms of psychosis and was put under observation in an institution. Since that time her condition has grown steadily worse. She was again admitted to hospital, and then placed under the care of a family, where she remained for eleven years, until one day she ran away and presented herself at the Institute and begged to be re-admitted. She has been there for the last three years. She spends most of the day sitting still and looking as though plunged in profound meditation. She speaks frequently of her 'true country' (meaning Sweden) where she possesses a magnificent hotel at which she invites her nurse to spend a month. She gives a marvellous but vague description of this imaginary country. She also claims that she has died and come back to life. She holds herself entirely aloof from the other patients and has no contact with them.

The Use of the L.M.T. in the Study of Mental Disorders

Administration of the test (see Plate 139). The patient took a series of equilateral triangles and arranged them in the form of a closed circle, the points of the pieces turned outwards. Then she constructed a sort of separating wall at the side of the circle (*Kontaktsperre*). Emphasis was laid exclusively on the form, colour playing no part whatever. The circle is composed of blue and white pieces, the wall of blue and green, but the patient selected the pieces at random. In this her extreme introversion reveals itself.

Example two Woman aged fifty-seven. At the age of twenty-two neurotic symptoms appeared which were considered at that time indicative of hysteria. She was treated by a psychoanalyst who soon concluded that she was not a suitable case for treatment because she gave too few associations, and was an incipient schizophrenic. She had been continuously in a mental hospital since she was thirty-one. An astonishing worker, she works in the hospital laundry steadily from morning till night with the regularity of a machine and without resting. For the rest of the time, she draws pictures in faint colours which are not without a peculiar charm; she also writes, almost automatically, interminable poems that she improvises and never reads over, which rhyme well, but are incoherent and mystical in content.

Administration of the test. The patient made a Design in perspective, seen from above and outside. It is a kind of empty space surrounded by crenellated walls with towers. This wall is neatly constructed in various colours giving a harmonious effect. Here, in contrast with the previous case, the colours were chosen with a great deal of care. The meaning of the Mosaic becomes obvious in the light of the numerous drawings made by the patient, since most of these depict a sort of valley or large garden surrounded by a circle of mountains. In the centre of the garden are a man and a woman and various animals (probably representing an earthly paradise which is in every respect a marvellous and secret country).

In two of our examples the patients who previously made a fully closed circle, later made a circle broken in one or more places, - which seemed to be a sign of disassociation and regression towards the *Third degree*.

We have also, in the course of repeated examinations, found the circle appearing occasionally in the Design of a patient who usually made an entirely different Pattern; in such cases it has not necessarily the meaning implied above.

Two further types of Design occur which yield specialised information about the patients who make them. These are Artistic Designs

The Use of the Test

made by advanced schizophrenic patients, which may take the form of Abstract Patterns or Representational Designs.

(iv) Artistic geometrical figures made by advanced schizophrenics

We have frequently found that a patient considered to be a catatonic or in an advanced state of hebephrenia makes an Abstract Pattern which, while simple, is good. It is a purely Geometrical Pattern, scattered in type, but harmonious in shape and colour. We find in such cases that we are dealing with a patient of artistic gifts who is capable of employing them in a manner greatly superior to what had been thought possible by the hospital.

Example one Patient aged seventy, who had been strange as a child. Her first schizophrenic breakdown, with hallucinations, occurred at the age of sixteen or seventeen, followed by another a few years later. Admitted at the age of thirty-six, she had never left the hospital. During the thirty-four years of her residence there, her aspect has always been typically catatonic; she remains seated at a table as in bed, inactive, never uttering a word to anyone. At rare intervals she gives expression to delusions, talks of angels, gigantic serpents, queens and knights. Regarded as schizophrenic dementia.

Administration of the test. The patient executed her response to the test, in the course of a series of tests in a room full of chronic patients, with unexpected facility. In less than a minute, she had picked out squares of various colours and had grouped them into a Symmetrical Pattern that was pleasing and harmonious both in form and colour. She then indicated that she had finished and seemed pleased with the result.

We learned that the patient is an excellent pianist, and that formerly she was led, from time to time, to the piano to play, but that for years no one has thought of doing this. That day, after the test, the patient was led to the piano and she played Beethoven and Mozart from memory without difficulty, if not without mistakes.

Example two The patient aged forty-nine, the daughter of a modest postal employee, demonstrated from childhood a very considerable talent for music. Her parents provided her with a musical education, with the idea that she should teach music; but she aimed higher and wanted to become a great concert pianist and studied the piano with a well known teacher. At twenty-two, on the eve of her debut in a

The Use of the L.M.T. in the Study of Mental Disorders

large concert, she came down with influenza and was prevented from appearing. Extremely upset, she consulted a psychoanalyst and declared that a piece of flesh had been removed from her chest. A series of sore throats obliged her to cancel her other engagements, and she came to believe herself hypnotised by her father and her piano instructor. Temporarily admitted to the hospital at twenty-five, and permanently at twenty-nine, she spent seventeen years in a mental hospital where she was considered to have advanced schizophrenia. When she was transferred to the Schaffhausen Mental Hospital, an attempt was made at psychotherapeutic treatment. Led to a piano, the patient, who had not played for over twenty years, began to play a classical air. In the following months she began to play with steady improvement her entire former repertoire, and also began to draw and embroider. The hallucinations and hebephrenic catatonic symptoms diminished perceptibly.

Administration of the test. Like the preceding patient she placed a red square in the centre of the tray and on either side a graceful arrangement of three diamonds in a good harmony of colours.

Example three A patient aged fifty-three. After an unhappy childhood spent in an orphanage, she held numerous positions as housekeeper or governess. Arrested by the police for reasons not mentioned in the clinical record, she was admitted at the age of thirty-one to the Mental Hospital where she still is. Considered for many years a case of advanced schizophrenia, for more than ten years she has not said a word, has refused all occupation, and sometimes makes stereotyped gestures.

Administration of the test. She executed rapidly and without difficulty a Scattered Pattern, harmonious in form and colour, though not symmetrical.

It was suggested to the patient that she do some embroidery. She set to work with zeal; to the great surprise of the personnel who thought her incapable of any occupation, she did beautiful work.

From these examples we can conclude that certain patients, seeming to be seriously ill, refuse to work simply because they are presented with work that is too simple for their actual hidden capacities. Patients of this group refuse to glue paper bags together or to peel potatoes, but they play Beethoven and Mozart, or do embroidery with taste and skill.

The Use of the Test

(v) Artistic Representational Designs made by advanced schizophrenics.

In a few other instances, patients also diagnosed as suffering from schizophrenic dementia, displayed in their responses to the L.M.T. artistic talent, not of a decorative or geometric character, but of phantasy and imagination, the presence of which had been unsuspected. Thorough clinical examination in these cases shows that the patients are much less regressed than had been supposed.

Example A patient aged thirty-nine. As a child she had been peculiar and stubborn; the first manifest troubles appeared around the age of twenty-one. At twenty-seven she married a man who was schizophrenic. Steady and progressive deterioration occurred in the patient with ideas of persecution and of poisoning, and she was admitted to hospital at thirty-three. The impression made by the patient is best summed up in the health bulletin sent to the legal guardian of the patient at the time she was presented with the L.M.T. 'Burned out schizophrenia. From time to time agitated, abusive, noisy, tries to attack others. When she is quiet, she always hides beneath her sheets and avoids all contact with her surroundings. Conversation with her is impossible. Incapable of all occupations, even the simplest.'

While we were conducting a series of tests, the patient lifted a corner of the sheets beneath which she was hiding and looked at us. Suddenly she jumped up, ran to the table at which another patient was seated doing the test, and showed by gestures that she wished to do it. It was not without difficulty that we persuaded her to wait. When her turn arrived, the patient threw herself upon the mosaic pieces, which she chose with great care, as much for shape as for colour, and started to create forms (see Plate 140).

Administration of the test. First she made a principal figure which seemed to represent a tree, with green ground below, a black trunk, green and white foliage, and on top a large white cover, like the famous pine tree in the poem by Heine:

*Ein Fichtenbaum steht einsam
Im Norden auf kahler Höh
Ihn schläfert; mit weisser Decke,
Verhüllen ihn Eis und Schnee.*
A pine tree stands alone
On the naked heights in the North
It sleeps; wrapped in a white cover
Of ice and snow.

The Use of the L.M.T. in the Study of Mental Disorders

Then the patient added some Decorative Patterns in the four corners of the tray; one of them in the lower right hand corner represented a little red flower. Time, fifteen minutes.

In the large sheet of snow which covers the tree, one can see also a representation of the sheets beneath which our patient constantly concealed herself. Another test, a few months later, yielded two flowers, well coloured and with a beautiful general effect.

It is evident that such a test does not bear out the diagnosis of 'final stages of schizophrenia'. Enquiry among the personnel of the hospital brought to light the following incident. Some time previously, a nurse from another ward had lost her mother; this nurse came to replace the regular nurse during the latter's free time, and was obliged for a moment to take care of our patient. Unexpectedly the patient said: 'It would have been better if I had died rather than your mother.' The nurse, surprised, asked: 'How did you know?' and the patient replied, 'I heard about it, I'm very sorry.'

Subsequent examination showed that this patient had an excellent capacity for human contact and that she responded with extreme sensitivity to the slightest expression of genuine sympathy. It was in reality a case of pseudo-dementia of affective origin.

Patients of this type react excellently to psychotherapy, where work therapy remains ineffective, at any rate in the ordinary sense. To a psychiatrist desirous of performing a therapeutic miracle, one could do no better than advise him to choose a patient whose mosaic is of this type.

(vi) Comment

The study of the correlations between the L.M.T. and particular forms of schizophrenia is only in its infancy, but it seems to be full of promise. It is probable that this study will have not only a scientific value but also a therapeutic one. It seems to us that for the more advanced stages of schizophrenic regression, new methods inspired by those working in Kindergartens may be more fruitful than the work therapy devised by Hermann Simon. Responses of patients to the L.M.T. should give useful indications as to which patients would be more accessible to group therapy, to art therapy, to individual psychotherapy, to occupational therapy and perhaps to still other methods.

The Use of the Test

(a) Acute attacks of schizophrenia. In the vast domain of schizophrenia, acute attacks (despite the great frequency of these conditions) are one of the most difficult forms of psychosis to investigate by means of the L.M.T. First of all, one has to exercise a certain caution. Contrary to chronic schizophrenics, who nearly always do the test without difficulty and often with pleasure, patients in the acute phase often display anxiety, in certain cases an anxiety which continues for hours or even days after onset. In such cases no psychiatrist worthy of the name would consent to inflict such a test on a patient: *primum non nocere*. Another difficulty lies in the extremely variable nature of the response obtained from one day to the next. At times we get Designs which differ greatly from day to day: sometimes disorganised and totally unsuccessful, sometimes completed Patterns, but, even so, very different in character one from the other. Before any valid conclusions can be drawn from such repeated examinations, we would need to have for purposes of comparison, a large number of responses from normal individuals repeated at equal intervals. This would be even more important with the introduction of further complicating factors, such as treatment with insulin, or other forms of treatment.

Among the small number of facts so far obtained, there is one already pointed out by Wertham. It happens sometimes that an individual who has suffered a schizophrenic breakdown and who has apparently recovered, makes a response to the L.M.T. characteristic of severe schizophrenia*. For example, in 1948 a French woman doctor showed me a Mosaic Design and asked me to do a blind diagnosis. Although I am opposed in principle to the practice of making blind diagnoses, the Design seemed to me so characteristic that I declared that it seemed to be a case of a serious catatonic condition. Actually, it was a patient during a period of remission after a grave catatonic phase†. In fact, the study of the L.M.T. during acute schizophrenic crises and during latent schizophrenia has yet hardly begun.

* Those who work with the Rorschach Test have long been aware of similar facts.

† See the history of this patient in the work of the doctor in question: ANDRÉE PELLETIER, *Les rechutes des malades mentaux à la sortie du service ouvert*, Lyon, 1949, pages 30-32, 70.

The Use of the L.M.T. in the Study of Mental Disorders

We will now give an example of a response to the L.M.T. during an attack of acute catatonic stupor.

Example A young Italian domestic of twenty-one had been employed for several weeks in a family in Schaffhausen, where her exaggeratedly serious and anxious nature had already been noticed. When she complained of vague abdominal pains, she was placed under observation in the gynaecological department of a hospital. There nothing could be found, but the patient manifested an intense anxiety and was soon found in an acute catatonic condition of extreme intensity. When admitted to the Mental Hospital, the patient was in a state of complete paralysis and mutism, with extreme negativism. She urinated on the floor, refused all food, had to be tube-fed, and did not react in any way to efforts made to establish contact with her. The authorities decided to send her back to Italy, and the patient was left in our care just long enough to execute the formalities.

Administration of the test. February 3rd, 1948. The materials of the test were shown to the patient and she was told what she should do with them. She did not react. She was then left alone with the tray and the box beside her. After a while she picked up some pieces and placed them on the tray: the response had taken ten minutes (see Plate 141).

At first glance the result seemed to be completely incoherent, the pieces dispersed at random. On closer examination, however, a certain organisation was discernable, and this was of concentric circles; in the centre a yellow square, around it a circle consisting of eight pieces, then another of twelve pieces, with four pieces making a fragment of a third and larger circle.

It was not possible to obtain a second response. This response to the test is impressive in that it was the only communication made by this patient, about whom we knew practically nothing, during her short stay.

(b) Schizoid individuals. It is sometimes extremely difficult, if not impossible, to differentiate diagnostically between a schizoid constitution, a state of post-schizophrenic deficiency, and latent schizophrenia. The same difficulty is found in considering responses to the L.M.T.

The Use of the Test

The responses of the schizoid personality can show very variable characteristics, none of which are constant, as follows:

Sometimes, as Wertham has pointed out, the test is done in black and white, or blue and white exclusively.

At times one notices, here too, the 'over-emphasis on form rather than colour', or a 'tendency towards repetition and supersymmetry'.

Several times we have come across forms of a symbolic nature: a sort of 'wall of separation' indicating a break in contact with the outside world, or forms 'rolled up like a hedgehog' with hostile points turned toward the outside.

Fairly often one finds simply a small Pattern as weak in form as in colour, characteristic of the coarctation which is found also with depressives.

Example A woman of thirty-five, of German origin was, as a child, of an obstinate and difficult nature. She worked in a factory until her marriage. She was withdrawn, extremely obstinate, gloomy and fanatical in matters of religion. She married and soon developed a violent hatred for her husband and her second child, who, she said, resembled the father. She decided one day to leave her husband and return to her own country. She put all her affairs in order, gave the house key to a neighbour, and ran away taking her three small children and a few objects chosen at random. She went a long way on foot, and, caught in a downpour, managed to take cover in a chapel near the German frontier, where she spent the night. Here the police found her the following morning with the children, soaked and hungry. Admitted to the Hospital, close examination failed to reveal any convincing evidence of schizophrenia. Instead she was diagnosed as a schizoid character of low intelligence.

Administration of the test (see Plate 142). The patient made a design on the bottom right hand side of tray. One notices a separating wall of black, with hostile points turned outward, as if to protect the rest of the figure from the outside world. The rest of the figure is also made up of diamonds with a central block of yellow diamonds (we have often noted this white or yellow centre in cases of weakness of the ego).

(c) Psychopaths. Our knowledge and experience of the L.M.T. with psychopaths is still very limited. On this subject, all, or nearly all, is still to be done.

The Use of the L.M.T. in the Study of Mental Disorders

In the responses of some aggressive and impulsive psychopaths, one notices a certain abundance of red, at times used with black. This, however, is far from always being the case. Wertham has noted that the response of mythomaniacs was characterised by its lack of imagination. We have been able to examine three mythomaniacs, and the responses of these three individuals did, in fact, show a great poverty of imagination.

CHAPTER TEN

THE USE OF THE L.M.T. IN THE STUDY OF CULTURAL PROBLEMS

Illustrations referred to in this chapter in the order in which they occur :

Plates : 51, 52, 53, 26, 41, 54, 55, 56, 57, 59, 58, 60, 61, 62, 64, 65, 66, 49,
28, 33, 27, 46, 47, 48, 144, 67, 70, 71, 50, 25, 44, 84, 143, 108, 79.

In this chapter we are concerned with the basic differences in responses to the L.M.T. that have appeared among individuals belonging to different civilizations and culture groups.

As was explained in the introduction to Chapter Four, the fact that such differences might occur was first observed in the course of examining responses collected in the U.S.A. Study of these differences made us alert to the possibility that differences of other kinds than those identified and described as the Am- and Eu-types might be present in the responses of subjects from non-Western people; and that knowledge of such differences in the handling of concrete materials with so many potentialities as the constituents of the L.M.T. might give valuable insight into the implicit attitudes and assumptions of the peoples themselves.

This side of the work is still in its infancy; but sufficient understanding has been gained to show not only that this is a promising approach to cultural problems, but that certain forms of insight may perhaps be gained through use of the L.M.T. which are not accessible by other methods. This chapter sets out the results so far obtained.

We will begin with a study of the U.S.A./European differences of which we already have some experience, and attempt to discover whether these differences both in attitude and in performance throw any light upon American and European attitudes in general.

1. DETAILED ANALYSIS OF AMERICAN AND EUROPEAN PATTERNS

In Chapter Four it was pointed out that there are three types of res-

The Use of the L.M.T. in the Study of Cultural Problems

ponse to the L.M.T. that occur in the U.S.A. – the Multiform, Composite and Diffuse Patterns which make use of the whole area of the tray – and which do not, in our experience, appear in Europe. There is in addition one centralised type of response, the Designed Slab Pattern which occurs in Europe as well as in the U.S.A., but with an entirely different significance.

The first part of this chapter will be devoted to an analysis of individual examples of the Am-type Designs described in Chapter Four, and comparison with Eu-type responses in order to ascertain more exactly the particular respects in which these Am-type responses differ from Eu-type Designs, and how these differences are structured. In the second and third parts of the chapter, responses from subjects of two other cultures will be considered.

It should be clearly understood that the present study is confined to consideration of individual Am-type responses made by citizens of the U.S.A. and their differences from Eu-type responses. No attempt has been made to infer any wider statistical implications.

We will take first *Multiform Non-Recurring Abstract Patterns* found in the U.S.A. and illustrated in Plates 51, 52, and 53 and compare Plate 52 with a typical Eu-type Pattern; Plate 26.

These two Patterns were made by two University educated professional women, one American and one English. Plate 52 is the response of a highly trained American woman engaged in independent critical and creative work of a sociological nature and familiar with many aspects of both continents of America but unfamiliar with Europe. Plate 26 was made by a British woman pharmacologist teaching in a University and engaged in original research in her subject. Plate 52 it must be noted was made by an American while working in a European setting, whereas Plate 26 was constructed by an English woman while working within her native setting.

If we put these two patterns side by side and recall that both arose as responses to the same instructions using the same materials, by individuals possessing many of the same personal characteristics, we find ourselves faced with the problem of accounting for the fact that these two responses are so radically different.

In studying Plate 52 we note that the pieces chosen from the box are disposed about the tray in a number of different groups with one piece standing alone, and that these groups bear no formal relation

The Use of the Test

to each other. Furthermore that many of the pieces are placed contiguously to each other in a manner which deliberately ignores their matching geometrical properties. In the English woman's response (Plate 26) on the other hand the essential character of the Pattern is its compact geometrical use of the pieces to produce a centralised highly organised and symmetrically arranged Pattern. It is immediately obvious that this is a Single Pattern. But it was equally clear to the maker of Plate 52 that every piece on her tray was a constituent part of a single total Design.

The important point is that, fundamentally different as these responses are, yet if the makers of these two Patterns were to meet on an international committee of professional women, they would find so much in common in their mode of general response to the ordinary problems and tasks which confronted them, that no fundamental difference of outlook would be likely to appear. Yet in conception, execution, critical estimate and interior construction there are hardly any criteria which would apply to both of these responses to an identical test situation. From what does this difference arise and what is its exact nature?

To arrive at an answer to this question a very careful analysis must be made of each individual response.

Let us consider first Plate 26, since this conforms to a type with which we are familiar. Here we have a Single Pattern composed of sixty-one pieces; four colours have been used, red and green being omitted. Four out of the five shapes have been selected, excluding the square, and the Pattern has been built about a central equilateral triangle. This triangle is placed in the exact centre of the tray, point downwards with a radiating arm extending from each side, three circles being placed within the angles made by the arms. The Pattern is completely symmetrical and each piece has been placed contiguously to its neighbour in an interesting combination of exact and inexact geometric juxtaposition, the arrangement of which brings out well the characteristically European attitude to the use of the geometrical qualities of the pieces.

As pointed out in Chapter Three, the sense of this Pattern is the exploitation of the triangularity of the central triangle, which is developed much like a musical theme. The pieces composing the radiating arms are used in strict accordance with their shared geometrical

The Use of the L.M.T. in the Study of Cultural Problems

qualities as far as the second pair of diamonds, and the arm is then terminated by a deliberate placing of two pieces against the sides of the diamonds, which project beyond them. These two are again placed symmetrically, and are identical in shape and position, but differ in colour. In their position they carry out the suggestion of an implied invisible circular plaque as the area of the tray occupied by the Pattern.

In each of the angles between the radiating arms six scalene triangles are arranged in a smooth hexagon. Each triangle is of a single colour and they are so disposed that their inner sides bring into being a hexagonal space of white paper and their outer sides a second hexagon whose sides differ in length from those of the inner hexagon. In this arrangement of the pieces therefore, the scalene triangles are fitted together one against the other in a completely symmetrical manner, but in place of the total juxtaposition of the diamonds to each other and to the half squares, these smaller triangles are arranged so that each scalene divides the length of its neighbouring piece into two parts and thus brings into being an inner and an outer new geometric shape, one consisting of the actual lengths of the scalene triangles and the other of a new length made by the subtraction from the longer side of the triangle of the length of its shortest side. Furthermore the use of white pieces in the Pattern to separate the yellow, blue and black from each other, brings out the value of these colours with remarkable clarity. The whole Pattern forms a most original combination of clear, decorative use of colour combined with detailed ingenuity in the manipulation of form. The important fact about this Pattern is that the relation of the Pattern and the tray is purely incidental. Thus if the shape or size of the tray were to be altered, so long as the new size were adequate to allow of some space around the Pattern, it is unlikely that the shape or construction of the Pattern itself would be altered.

In Plate 52 an entirely different state of affairs appears. Here seven groups of pieces and one single piece are disposed over the whole area of the tray and are nevertheless felt by the maker to constitute a single whole. In contradistinction to the English Pattern, the shape and size of the tray is all important and it is clear that the relation of piece to piece and group to group would be fundamentally altered were the size and shape of the tray to be changed.

In Plate 52 we have an arrangement of thirty-five pieces about the surface of the tray in which all shapes and all colours are used, without any one shape or colour predominating. These pieces are placed in relation to each other, twelve with contiguous sides of matching length and twenty-three with varying non-geometrical relationships.

The Use of the Test

Moreover the subject did not feel that the *exact* position of any of these pieces in relation to its neighbour, was of major importance so long as the *general* relation between group and group, and all the groups and the area of the tray, was maintained.

A further profound difference between the two Patterns appears when we consider an alteration in any of the pieces or the loss of any one piece. A comparison suggests itself with the work done upon biological embryos. As is well known it has been found by zoologists working on shellfish that it is impossible by any manipulation of the embryo to alter the pattern of the emergent adult since the innate structuring is too strong; all that can be accomplished by alteration in the embryo is to mutilate the emergent adult by destruction of one or other essential component of its structure. Similarly in these Patterns the structure of Plate 26 is so definite and clear that even a major change in or loss of any of the pieces would bring about only a mutilation of the emergent shape but not a change in the total Pattern. In Plate 52, on the other hand, the whole Pattern is so fluid and has such delicately balanced relationships between the groups composing it and the shape and area of the tray, that any major change or loss of the pieces would bring about a significant change in the whole effect of the Pattern, or even a disruption of it.

It becomes clear therefore from a study of these two Patterns that in the Am-type Pattern a new element has appeared which is of major importance for the whole significance of the Pattern. This is a different use by the subject of the relation between the pieces and the space of the tray. In both cases the construction proceeded smoothly, the subjects clearly taking for granted that in constructing their Designs they were following an obvious course of action. Since the differences between the two Patterns are so marked it seems legitimate to deduce a difference in the spontaneous attitude of the subjects to the materials of the test.

This difference becomes very striking as we watch the two subjects constructing their Patterns and talking about them as they work. Let us call Plate 52 Pattern A and Plate 26 Pattern B; and their makers respectively subject A and subject B. The attitude of subject B to the space represented by the area of the paper on the tray is entirely different from that of subject A. For subject B a background surface is essential because the background appears within the hexagons of

The Use of the L.M.T. in the Study of Cultural Problems

the Pattern, and while it is possible (and even probable) that the Pattern itself would have been of the same shape had it been made upon the larger area of a table top, yet the existence of the edge of the tray and of the tray itself gives it a certain position at the centre of the tray, the edge of the tray forming a convenient frame to the Pattern. This background space has therefore a certain importance, but it is a neutral importance which merely complements and emphasises the close structure of the Pattern composed upon it and which, by appearing through three elements of the Pattern, brings out their character and ingenuity. The area of the tray and the space of the paper are entirely subordinate to the Pattern constructed upon it.

The attitude of subject B to the pieces as instruments with which a pleasing and interesting construction can be set out on a neutral oblong background framed by the raised edge of the tray, is a spontaneous attitude which seems natural to most Europeans.

Subject A's attitude to the space of the paper enclosed within the edge of the tray is radically different. To subject A the space of the tray is the central given *datum* of the stimulus objects: tray and box of pieces; it makes an impact on her which forms the foundation of her response. It cannot be treated as a mere background, since this space is itself the determining factor in the ultimate Pattern which is to appear upon it. To subject A the pieces in the box are instruments with which significance can be brought into the space, and the adherence of the white square to the top edge of the tray defines the relation between the pieces which, together with the space of the tray, forms the total Design.

When constructing the Pattern, subject A explained that the spaces between the groups, or the individual pieces disposed over the tray, were as important as the pieces themselves, and in the act of composing the Pattern she constantly experimented with and changed the position of groups and pieces relative to each other, and to the space of the tray so as to achieve maximum harmony.

Thus the interior commands to which these two subjects are responding are pre-eminently different. The space of the tray exerts on subject A a compelling quality demanding an attention equal to, if not greater than, the attention demanded by the box of pieces, and constituting the major challenge. To subject B the *space* of the tray, as a separate factor, is not present at all; attention is wholly focussed

The Use of the Test

upon the pieces in an attempt to see what can be done by studying and combining their various fixed qualities.

When we turn our attention from the tray to the box of pieces, we find a parallel difference. To subject B it is the fact that these individual items of form and colour are cut in definite geometrical shapes that is the determining factor in the construction of the Pattern; and it therefore seems obvious to her that the essence of the challenge presented by the test is a demand by the tester that the subject shall occupy himself with consideration of these inter-related qualities and out of them construct his individual response. Subject B is responsive to this demand of the fixed qualities of the material, and allows her response to be determined by them. What interests her is a kind of contest with the fixed and limited qualities of the pieces and the pleasure of experimenting with her power to dominate these limitations and utilise the qualities to force them to serve her ends. This attitude is the usual one with European subjects who respond to the test by the construction of an ingenious Design.

Subject A has no such relation to the pieces. She feels free to use the material as it occurs to her, complying with or ignoring their geometric qualities at will, treating the pieces now as fixed entities, as with the two squares at the top of the Pattern, now as blocks of colour of differing sizes, as in the groups in the right hand area of the tray. Judging from analysis of the Pattern alone it is clear that this subject is indifferent to the complex possibilities of geometric interaction of the pieces and uses only the simplest inter-relations in a loosely structured way. She is instead wholly concerned with the total interaction between the pieces chosen and their effect upon the area of the tray.

When we turn from form to colour the same fundamental difference appears. Subject B is economical with colour; she uses only the strongest contrasts, and those in a limited way, and employs colour contrast not for its own sake but to emphasise the basic qualities of the form of the Pattern. Subject A on the other hand rides loose to the abstract qualities of the pieces in regard to colour as well as to form; and while, taken as a whole, the colours used combine with the shapes to produce the final result, their relation to the form of the groups is of the loosest. Here an integral general effect is aimed at, rather than, as in B, an intimate and detailed colour and form effect.

The contrasts of attitude so far described arise directly from analy-

sis of the two responses as they stand. They are confirmed when we take into consideration the following account which was given by subject A of her interior response to the test:

'When I first saw the pieces of plastic, I was bewildered. What was I to do with them? Sewing, knitting, painting, I could attempt. As the bright shining colours appeared, I felt delighted, as with paints - I *could* do something now with the tray space. I half thought this is the map of my country: I'll move around. I recall constructing my design from right to left, i.e. from New York my home, to Los Angeles on the west coast. My work has taken me across our marvellous continent by train, car, plane, airways, in moods of joyous excitement. I think these moods and anticipations touched my mosaic work. This mood colours any new enterprise: high adventure, limitless scope.'

In this account a number of concepts are involved which we have not met with in discussion of European Patterns and to which we must later give careful thought. At this point we are only concerned with the general question whether these differences in construction relate solely to individual differences in the personality structure and outlook of the two makers of Patterns A and B, or whether they have a more general significance.

To answer this we must turn to another pair of Patterns: Plates 51 and 41. For convenience let us call them Patterns C and D, and their makers subjects C and D. When we compare Pattern C with Pattern D we find equally challenging differences. Pattern C was made by an American typist, and Pattern D by an English woman industrial worker. To its maker Pattern C was a complete whole, the four individual groups of pieces forming *together* a single Design. The groups composing Pattern D on the other hand are a collection of isolated individual Patterns that have no relation to each other beyond that of a common authorship and appearance together upon the same tray.

What does this indicate? Pattern C consists of three groups of pieces in which the elements are disposed geometrically and symmetrically, and a fourth, the largest group which is put together without an overall geometric relevance, although a certain symmetry appears here and there in it. How then, the maker of Pattern D might ask, could these groups have any common inter-relating factor? This question would be devoid of meaning to subject C.

So here again are two English-speaking adults obeying identical instructions and using identical tools; and once more, the difference in

The Use of the Test

the Designs arises from difference in the point of focus in the minds of the makers. To subject C the area of the tray presents the essential element of challenge: it is a space which can be made significant by the arrangement of pieces upon it. When we study the individual groups of Pattern placed in this space, we find that subject C sees the geometrical possibilities of the pieces quite as clearly as subject D, but these are to her only one of the possible qualities of the total materials of the test and not specially important ones; whereas to subject D these qualities constitute the central character of both the materials and the test. Once again therefore we have a use of the materials so different that it is legitimate to deduce from it a corresponding difference in attitude; and again the factor that determines the different attitudes of the two makers is the part played by the *space* of the tray. To subject C the area of the tray is a determining factor at every stage of thought in the production of the Pattern and of every aspect of the final Pattern. To subject D only one element of this factor appeals, that of size. In her the impulse leading to the formation of a number of different groups of Pattern is related to the area of the tray only in so far as this area makes possible the production of a greater or lesser number of the type of separate and individual Patterns in which the subject is interested. Furthermore, so clear is it to subject D that the geometrical qualities of the pieces are their determining qualities, that it would not occur to her that these pieces could be used in any other way. To subject C on the other hand, it is within her choice to use them in any way she wishes, and each mode of use is of equal validity.

We have here therefore a fundamental difference of attitude towards the manipulation and arrangement not only of individual pieces, but also of groups of pieces both in relation to themselves and to the space of the tray. When we come, at the end of this chapter, to discuss the response of a member of a primitive cultural group this analysis of Patterns A and C becomes of central importance.

It is possible that in the four Patterns so far studied the factor of sex might have played a predominant role since all four were made by women. In Plate 53 therefore we turn to a pattern made by an American man. Here we find yet another difference. In this Pattern every piece on the tray is placed in a geometrical relation to its neighbour, but the group which these pieces combine to make is non-geometrical

The Use of the L.M.T. in the Study of Cultural Problems

in shape and not related to the centre of the tray. Once more the final Pattern consists of a number of different units of Pattern which are regarded by the maker as forming a single whole. And once more it is the disposition of the different groups about the tray, and the interaction between the total space of the tray and groups of Pattern, that to the maker determines the whole.

It would appear then that this difference does not arise essentially out of any difference in attitude to the geometrical qualities of the pieces, nor out of any difference in sex or social status in the maker, but from far more subtle qualities. It would never occur to the maker of Pattern D, whose use of individual pieces is similar to that of the maker of Plate 53, to imagine the separate items as *together* making up one Pattern, for this would involve an awareness of the spaces between the blocks of Pattern *as composing part of the Pattern*, just as the space in a picture or a formal design is an integral part of the total effect; and such a conception of the space of the tray is quite foreign to subject D. To subjects A and C however it is equally foreign to think of the groups of Pattern placed on the tray as having no interrelation.

In Chapter Four the term Multiform was chosen to describe the type of Pattern which we have been considering, since the final form of the Pattern is composed of several related units. The point now arises whether Multiform Patterns occur among Europeans. If so, have they the same structure? Multiform Patterns are so rare among Europeans that there is a real doubt as to whether, apart from transient appearances during personal psychotherapeutic analysis, a European ever naturally expresses himself in this mode. But in the writer's experience, even when such Patterns do occur in Europe, there are subtle and important psychological differences between the European and the American Multiform Pattern. These are of the following nature. Let us take as an example Plate 54, made by a Scandinavian professional woman with some training in art, during the course of her training analysis. Here it is true that five groups of pieces are disposed about the tray and (as in the case of Plates 51 and 52), are felt by the maker to form a single whole. The mode of use both of shapes and colours is, however, strikingly different from that of Plates 51, 52, and 53. In Plate 51 the three groups at the top of the board each exploit a different piece and also a different type of arrangement: a V shape,

The Use of the Test

an oblong and a line. In the lower Pattern four shapes are used and these exclude the component shape of the groups forming a V. In Plates 51 and 52 all five shapes are distributed throughout the Pattern. In these two Patterns therefore each shape contributes to the effect of the *whole* of which it forms a part. In no part of either Pattern is there any repetition. But the European Multiform Pattern (see Plate 54) is quite different.

Out of the five groups of which it is composed, four use almost identical shapes grouped in two pairs. Thus the two red groups are composed of scalenes and one half square and each of these is arranged in a similar manner. The blue/yellow and green/black groups again use scalenes in an almost identical way. The element of difference introduced into the green/black group is composed of a diamond, two half squares and a scalene, and these pieces are repeated in the remaining fifth group. The colour also is used differently from that in the Am-type Multiform Pattern, the colour in each case appearing in blocks and being repeated in blocks, so that a block of black balances a second block of black, and a block of red balances a second block of red.

Here then a total construction has been made out of items of thought, arranged to balance one another on a background of space. The space is there as a necessary element, because the items must be separated from each other in order to bring about the Pattern; but each item could stand by itself as expressing a single idea. Such separate consideration is possible with the two upper groups of Plate 51, but not with any part of Plate 52; and even in Plate 51 the meaning of either of the formal groups would be quite different were they not modified by the loose arrangement of the lower one.

Let us consider next Plate 55, made in England by an Argentinian girl of Scottish descent.

Here an arrow headed band of black with a central many coloured rosette divides the space of the tray diagonally into two unequal halves. A line of white diamonds in the opposite diagonal meets the rosette, and the black is repeated on either side of the bottom left hand diamond; a curved line of blue diamonds and scalenes flows around the left hand edge reaching to more than half way along the bottom edge. From this point four lines of red scalenes radiate on either side of the black band, reaching again half way across the tray. The remaining spaces are filled on the left by yellow straight, and on the right by green curved, lines of scalenes.

The Use of the L.M.T. in the Study of Cultural Problems

In this Pattern the use of space is intermediate between the Am-type and Eu-type, in that the red, yellow and green pieces are distributed in a free manner over portions of the tray, and an alteration in the shape of the tray would in fact alter the Pattern. On the other hand the use of the pieces is that of Eu-type Patterns, and the central band of black and the crescent of blue have a regularity and symmetry that would never appear in an Am-type Pattern.

Another Eu-type Multiform Pattern, Plate 56, was made by a British girl of sixteen after successful treatment for a severe obsessional neurosis. In the course of her treatment, the subject developed a remarkable ability for dramatic 'lay out' with objects. Here is a Pattern composed of several independent blocks of Pattern, being in this respect comparable to the Am-type Patterns. On the other hand, in this Pattern all the different groups are orientated round the central cross which gives meaning to the whole and determines the positions of the subsidiary groups. Here we have a number of groups of Pattern considered as a whole, the disposition of the groups about the space being intermediate between the arranged Collective Eu-type Pattern and the Am-type of Plate 53. The essence of the Pattern however is the counterbalanced repetition; whereas in the Am-type Patterns repetition is rare, and when it occurs, as in the two centre groups of Plate 53, is incidental rather than essential, as it is in Plate 56.

Thus in Multiform Patterns made by American subjects space, whether considered as a whole before a piece is laid down or as it exists between the groups of pieces is of equal importance with the pieces; whereas, in the Eu-type of Multiform, space is a silent partner, a mere background upon which the arrangement of pieces can be displayed. Furthermore the element of repetition if it occurs in the Am-type Multiform is of little importance, whereas in the Eu-type, repetition of items in different positions or in slightly different variations of arrangement, forms the essence of the Design.

Let us now pass to the consideration of the second of the four types of Patterns described in Chapter Four: *Composite Patterns*. We will first take Plate 57 which was made by an American woman of culture and originality and compare it with Plate 59, the work of an English Film Director. These two Patterns consist of a mass of pieces connected with each other instead of different individual blocks of Pattern, and make use of the whole area of the tray. To some extent the

way in which the individual pieces are used is similar in both Plates in that only here and there in either are pieces which are not geometrically combined. But a new factor appears: the attitude of the subject not only to the area of the tray but to an invisible quartering of this area. The maker of Plate 59 is aware of the area of the tray and to some extent enjoys and manipulates it, but to him this area has certain obvious, though invisible, characteristics. It has, for instance, a centre point, and the space around it is orientated in relation to this centre. Corresponding to this assumed but invisible centre, the Pattern constructed on the tray has also a centre, though not necessarily a geometric centre, and the balance of the Pattern moves about it. To the maker of Plate 57, on the other hand, no such centre exists. There is a very definite form and structure about this Pattern, and a real relationship between its component parts; but these have no relation to an invisible centre of the area upon which it is extended; the area of the tray is regarded as an even space which can be used in any manner the subject desires, the determining factor being the edge of the tray. Thus the centre of the Pattern, in so far as it can be said to possess a centre, has no relation to the geometric centre of the space within which it is placed – or, to put it in another way, to the maker of Plate 57 the space is unstructured, either actually or invisibly; whereas to the maker of Plate 59 it is invisibly structured and the Pattern to be made must be constructed in relation to this dominant structure.

In this pair of Patterns therefore we find a third point of difference. When, as in Plates 57 and 59, the space of the tray is as important a factor to the maker of one Pattern as to the other, this space is structured for the subject of Plate 59, but not structured for the maker of Plate 57. It will be remembered that we have already met this element of structure as implicitly present in Plate 26 in which the placing of the Pattern on the tray had also a relation to an implied centre to the tray itself.

If we now consider the second example (see Plate 58) of Am-type Composite Patterns given in Chapter Four we meet another aspect of the difference between the Am-type and Eu-type Patterns. In Plate 58 a mass of pieces is arranged along the bottom long edge of the tray, without (at least to the European eye) there being any structure visible in their disposition. From here the pieces extend upwards to an irregular fringe of single pieces. The whole, to an American eye, as

expressed in the description quoted on page 96 gives the effect of a Pattern; the European can see no Pattern. We have found no example of a Pattern of this type made by a European adult; the nearest to it is Plate 60 made by a Swedish child and this is only partly similar.

Thus, regarded from the point of view of structure, two implicit assumptions appear to govern both the creation of Plate 58 and the American opinion of it. These two assumptions, it seems to the writer, are a concept of the area of the tray as unstructured, and the absence of any inner compulsion in the subject to arrange the pieces so as to give any overall *gestalt*. What appears in Plate 58 is a base line of pieces geometrically fitted together, from which blocks of geometrically used pieces project upwards; not, however, as in the Swedish Pattern, to make a regularly disposed block of similar pieces, but in an irregular disposition of blocks of pieces on the left hand thrusting upwards and on the right pointing outwards towards the edge of the tray. To some extent these movements appear in the Swedish Pattern also, but the blocks of pieces are more regular. In the Am-type Pattern, above these thrusting blocks, a number of pieces of differing shapes and colours are disposed freely, making a loose and irregular edge to the Pattern; in the Swedish example the same idea appears, but the pieces chosen are of one shape and regularly disposed along the edge. Moreover Plate 58 arises from the bottom edge of the tray and Plate 60 from the top.

Since the Swedish Pattern is that of a boy of nine it is probable that immaturity played a large part in the final form of the Pattern. There is no hint in the description of its manner of construction to suggest that this final form was designed; on the contrary, it appears to have come about, as certain Patterns of children of this age do, through the placing of one piece next to another just as they came to hand, with no concept of an overall *gestalt*. The maker of Plate 58 on the other hand was a successful High School girl of close on eighteen years who deliberately constructed her response in this way.

• A third variety of Composite Patterns remains to be considered; that termed *Objective Experimental*. This is the name given to a type of Pattern that occurs in collections from the U.S.A. The large Compact Pattern illustrated in Plate 61 is an example of this type. This is a Pattern that makes use of the whole area of the tray, in which the pieces are combined geometrically and regularly but in which there is

The Use of the Test

no overall *gestalt*. Here we have a large Pattern in which three elements are combined. The first is an arrangement of interlocking Fundamental hexagons and one separate hexagon, all carried out in alternating blue and black, the second a red and yellow triangular strip made of diamonds and fitted between the two blocks of hexagon, and the third an irregular mass of pieces projecting downwards and to the right in which different inter-relations of squares and diamonds are experimented with. This pattern, made by a successful and well adjusted High School boy of seventeen, was a deliberate construction expressing experimentation with the possibilities of the different pieces.

We have been able to find no parallel Pattern to Plate 61 in our European collections and the only Pattern at all resembling it is that of Plate 62 made by a neurotic English girl of fifteen. This Pattern is somewhat similar in shape to Plate 61 and is, like that, compact in structure, the pieces being for the most part also used geometrically. The difference between the two lies in the absence of planning in the English Pattern. Here piece was added to piece at the edges of those already placed with some general idea of 'making it smooth'. The attempt to do this and the inability to succeed is as characteristic of neurosis in the European as the Experimental Am-type pattern is characteristic of the American impulse to 'see what the pieces will do'.

In Multiform and Composite Patterns therefore both the area of the tray and the pieces that are laid upon it are treated experimentally by the subject, his aim being to see what effect the spaces that remain will have upon proportions of the Pattern already made.

There is one more variant of this interaction to be considered; that of the *Diffuse Pattern* illustrated in Plate 64. In this Pattern the space between the pieces is as important as the pieces themselves, but not in the same sense as in the Spaced Design of Chapter Three where the area left uncovered forms a Negative Pattern as symmetrical as the Pattern of the pieces.

In Plate 64 there is no symmetrical element in the distribution of shapes and colours, but a certain balance and harmony is perceptible to those who have trained themselves to an understanding of similar problems in modern art forms. In this type, as in the type represented by Pattern A, what is aimed at by the subject is to cover the surface of

the tray with a pleasing distribution of colour and form; and although the arrangement has no *gestalt* it is felt by the maker to be 'a pattern'. In this Pattern therefore the subject is aware of the space of the tray and deliberately makes use of it in composing his Pattern. No parallel to this has so far been found among Eu-type Patterns. When arrangements do occur that superficially resemble it they arise from a different process such as when small children or schizophrenic patients place single pieces at random over the tray. Thus in the three groups of Am-type Patterns that we have been considering – the Multiform, Composite and Diffuse varieties – it appears that when we compare them with the nearest approach to them that we can find among Eu-type Patterns, the major difference lies in what is revealed by the Patterns themselves about the attitude of the maker to the space of the tray.

But before we consider the possible significance of this and other differences between the two types of response, we need to consider a type of Pattern in which, although the form may be similar, the significance is very different. This is the *Designed Slab*.

Slab Patterns are collections of pieces (usually small) used either geometrically or non-geometrically or in a combination of both, arranged without a formal outer *gestalt*. As explained in Chapter Four, such Patterns when they occur in European collections, always represent a *failure* on the part of the subject either to achieve a desired *gestalt* or to conceive of a *gestalt* at all. That is to say, their appearance is associated either with immaturity or with disturbance in the subject. The Am-type Designed Slab, on the other hand, often represents to the subject who makes it a pleasing and satisfactory achievement, fully integrated with his conception of the qualities that generally go to form a pattern. Such Patterns are seen in the same way by American spectators. For example Plates 65 and 66 were made by well adjusted and successful American young people of school age and are found by many Americans who have studied them to be pleasing. We are clearly here touching upon more profound differences – differences not so much of the appearance of the finished structure, as of attitude and aim in relation to the whole reaction to the test. What then is taking place in the subjects who make these Patterns? To formulate even a tentative answer we will have to consider carefully not only the detailed structure of the Pattern itself but also the comments

The Use of the Test

of the subjects who make this kind of Pattern about their own and similar constructions.

Let us consider first the detailed structure. The characteristic of this type of Pattern is the absence of any formal outward shape. These are single Patterns usually placed centrally on the tray and may be of any shape. At first sight it would appear that the element of space plays no part in this form of response; but this is a mistake. We shall find as we proceed that here too space is a real factor, though in a different sense. For the moment let us put it on one side and confine our attention to the relation of the pieces to each other. When we do so an unexpected fact emerges. As we listen to the subjects who make these Designed Slabs talking about their Patterns, we seem to be in a different world from the one we inhabit when studying Eu-type Patterns, and to be dealing with forces of a different nature from those we have hitherto been considering.

In all the other single Patterns illustrated in this book, there has been a certain repetitive quality about the items of the Pattern; pieces placed at a certain point in the Pattern are balanced by similar pieces placed in other corresponding places in the Pattern and having a relation to each other. Moreover this relation is as real in Patterns whose total construction is asymmetrical (e.g. Plate 49) as in those where it is obviously symmetrical (e.g. Plates 28 and 33) or where the symmetry is concealed (as in Plate 27).

But in the Patterns we are now considering, nowhere in the whole Pattern is the relation of one piece to its neighbour exactly repeated. In fact repetition appears to play no part at all in the construction of the final structure. What then are the factors at work in bringing about the Pattern? The answer is to be found in the descriptions given by American spectators of these Patterns; and here once again we come upon something entirely new: a conception of the shape and colour of the *individual* pieces as having a dynamic relation to each other.

From an analytical angle these Am-type Designed Slab Patterns form the antithesis to the concept of 'patterns' as usually understood in Europe. We therefore need to pay special attention to them and to analyse the different aspects of the Patterns separately.

(a) *Attitude of the subject to the pieces* In the European attitude to the pieces, each piece used by the subject plays its part in the total

The Use of the L.M.T. in the Study of Cultural Problems

structure of the Pattern: it is a part of a whole; whereas in the Am-type Designed Slab, described in Chapter Four, the tendency is for each piece to be felt as an entity expressing a particular relationship to its immediate neighbour and not necessarily having a relation to the Pattern as a whole.

(b) *Geometric relations of the pieces* As already explained, the geometric relations of the pieces are to the European the essential fact about them, whereas to the American subject who makes a Designed Slab the geometric relations between pieces are simply aspects of the pieces which he can use or not as he pleases in the construction of his Design.

(c) *Repetition* Repetition either of single pieces or of groups of pieces in relation to other pieces is to a European an essential element of design, but to the maker of a Designed Slab, repetition either of single pieces or of combinations of pieces is totally unimportant.

(d) *Outward Form* A Designed Slab has a form of its own. To the experienced eye this form can be detected and the difference between Designed and Simple Slabs worked out (for example those illustrated and discussed in Chapter Eight).

In making an Am-type Designed Slab the subject selects his pieces one by one for their specific shape or colour and aims at creating with them a new kind of form. He may succeed or he may not, what he makes may please him or not, but his aim is entirely different from that of the European. This difference is of fundamental importance to the understanding of responses to the L.M.T., since to understand a Design it is necessary not only to analyse the actual structure of the finished Design but also to study the relation, in the maker's mind, of what he has done to what he set out to achieve, and then to compare this with the effect made by this Design upon a tester or critic from the same culture.

Thus an American looking at Plates 65 and 66 might describe these as follows. In these Patterns the pieces are placed both as regards colour and form so as to tell individually one against the other. The black and green triangles of Plate 66 thrust outwards and the blue diamond and line of squares in Plate 65 downwards, suggesting energy and vigour. The space between the downward thrusts in Plate 65 and the white pieces in Plate 66 suggest air and light. The yellow triangles in Plate 65 with the unattached white triangle and the trio of two red

The Use of the Test

and one black triangle in Plate 66 give an almost humorous air. Both patterns are original, spontaneous and pleasing.

Since Plate 65 was made by a successful intelligent High School girl of seventeen and Plate 66 by a Grade VII boy said to be well balanced and successful in human relationships, these qualities must be expressed in the patterns, although Europeans find the task of understanding them one of great difficulty. Indeed the understanding of Am-type Designed Slabs is the most difficult of all the problems of the L.M.T.

In considering the position of space in these Patterns we meet an aspect which first appeared in the description given by the maker of Plate 52: the element of *movement*.

For an understanding of all Am-type Patterns the question of movement is always important. In Chapters Two and Three we have considered movement in relation to Representational Designs and to Abstract Patterns with Recurring Form, but the idea of movement embodied there, differs fundamentally from that now before us. In Eu-type Patterns movement, when it appears, is a quality of *the Design itself* (see Plates 46, 47, 48). It is the Design or part of the Design which either appears to the onlooker to move or is designed by the maker to express force within the Pattern moving in one or other direction. In Am-type Multiform Patterns on the other hand, movement is implied (as described by subject A in relation to her own Pattern) by the position of the groups of pieces on the tray. This movement is a relation between the pieces and the space of the tray considered as an equal partner in the production of the total Design. The report on Plate 144 by the observer makes this point clear. Plate 54 illustrates the Eu-type attitude to space particularly well and the description given of it by the maker points the difference between the two attitudes.

'The space on the tray is felt to be a stage on which a drama takes place; each block has its own emotional connotation, acting a part in the whole performance; therefore the placing of the blocks on the tray is determined by their inner relationship; it is, as it were, a 'still' cut out of a film strip, and the edge of the tray is a limiting factor in the same sense as the backdrops and the wings of a stage'.

Thus force is regarded by the maker as inherent in and expressed by

the individual groups of pieces in themselves, and in the inter-relationship between group and group *moving on a neutral background*. The area of the tray here comes into the construction of the Design only in relation to its size, and according to the maker a larger tray or one of a different shape would have affected the ultimate Pattern only through permitting a further development of the essential directions of movement already expressed in the shape of the groups and not by altering the groups themselves.

In Designed Slabs, on the other hand, it is the eye of the spectator which moves as the elements of the Pattern are contemplated, and in this movement of the eye there is often included also the idea of 'getting out', of 'being caught' within the Pattern or of being able to move freely in and out.

An interesting parallel suggests itself with Chinese paintings. In contradistinction to the majority of European paintings in which the composition of the painting forms a single whole, the basic conception of Chinese paintings is the tracing of lines which follow one another in a downward direction. The artist at no time gives a centre to his picture or has a single focus at which interest should be concentrated. Thus the idea of movement is bound up with one aspect of the idea of space; and this is, as it were, an informal space *within* the total design, not as in European Patterns a formal space which is a part of the form of the Design.

In these Am-type Patterns the concept determining both the Design itself and the use of the pieces forming the Design is one of rhythm and movement. The pieces are balanced against each other at their tips, made to slide up and down against each other and poised one upon the other. Thus the question of enclosed space has a significance entirely different from that either of the circle in Abstract Patterns with Recurring Form or of the Pattern with a Hollow Centre*. In both of the latter the pieces around the space are uniform, and the structure is usually symmetrical. But if we study such an Am-type Pattern as Plate 67, which was made by a wholly successful American girl showing none of the characteristics of autism, a quite different phenomenon appears. This Pattern is more 'an amusing ring' than a hollow space, although it does, in fact, enclose a roughly circular

The Use of the Test

space. Since this type of Pattern has not so far been found in European collections, only intensive study by Americans of this type of Pattern and its relation to other Am-type Patterns and to the subjects who make them, can bring to light the significance of this form.

Two other factors need to be considered: the use of *colour* in Am-type Patterns, and of *superimposition*. Plate 70 is an example of the use of colour in Am-type Patterns. Here is a Designed Slab Pattern carried out in red and black and called by the maker a 'study in colour'. What is new about the Pattern is the use of colour in a manner which resembles the use of paint, again with no repetition and with an irregular distribution of red among the black. Only one Eu-type Pattern has been found which makes a somewhat similar use of colour, that of Plate 71, which is a large irregular Pattern made by an English architect. Here all the colours and all the shapes are used to cover the whole tray with slabs of colour through which an irregular line of yellow and white pieces runs in the manner of a modern painting. As far as our present knowledge goes this type of response is rare in the U.S.A. as well as in Europe.

(e) *Three dimensional use of the pieces* It has been pointed out in Chapter Three and illustrated by Plate 50 that the effect of a Pattern can be enhanced through the addition of a second, or even third layer of pieces. Where this occurs in Eu-type Patterns it is in relation to symmetry, as in Plate 50, certain elements in Symmetrical Patterns being added to or emphasised by the addition of extra pieces superimposed over the existing Pattern or even by the construction of a second Symmetrical Pattern superimposed over a Pattern already constructed. In Am-type Patterns on the other hand individual pieces are now and then placed upon or partly resting against other pieces at any point in the Pattern without a relation to symmetry.

2. DISCUSSION OF THE SIGNIFICANCE OF THESE DIFFERENCES

The points that require explaining in Am-type Patterns are therefore: the relation between the pieces used by the subject and the space of the tray; the relation of the pieces to one another; the form in which ideas of movement appear; and the relation to symmetry, repetition and balance and to superimposition.

The Use of the L.M.T. in the Study of Cultural Problems

It is not in the power of any European to venture an explanation of these factors. We are indebted to Dr Ruth Landes of New York for initially describing Am-type Patterns to the author in such a way as to make possible an analysis of their characteristics, and for suggesting correspondences between certain aspects of life in the U.S.A. and characteristics of these Patterns. We have had the opportunity of discussing with Dr Margaret Mead the problem of Am-type Patterns both in regard to the insight into American attitudes which may be gained through their study, and to the parallels that may be drawn between the response of makers of Am-type patterns to the test and their general reaction to life. Dr Mead having read the material is in agreement with the general line of the argument. We are indebted to her also, and to Mrs Schwartz who collected it, for permission to reproduce the Manus Design illustrated in Plate 144 and its analysis.

On the whole, American imagery tends to be motor kinaesthetic where European imagery is visual. When confronted with a new tool the American is apt to say 'what will it do?' The European will more usually ask 'what exactly is it?' It is therefore perhaps to be expected that some difference in reaction to a practical tool would be observable in the two cultures. There is however a certain amount of evidence to show that responses to the L.M.T. made by American citizens whose youth was spent in Europe tend to follow the Eu-type of Design. It would appear therefore that the differences in response described in this chapter are a reaction specifically related to the experience of human development within the general pattern of North American life, with its special historical and geographical background.

Until very extensive investigations have been carried out *within* the American continent as to percentage distribution of Am- and Eu-type Patterns over the whole area, and in relation both to types of American citizens and to the continent on which the formative years were spent, no definite conclusions can be arrived at. But there do seem to be certain correspondences between the differences studied in the first part of this chapter and some elements of the 'American way of life' that are suggestive, and, if correct, illuminating.

Let us consider first the fundamental question of the way in which the materials of the test are regarded by the subject. We have already described in detail how the maker of a Eu-type Pattern responds to the instructions by focussing his attention on the pieces in the box,

and by beginning to handle, examine, and use them. To him the tray is nothing but the ground of a finished product upon which the figure is displayed; it is therefore neutral in significance and completely devoid of interest.

Discussion with makers of Am-type Patterns makes it clear that their attitude is fundamentally different. If the maker of a Eu-type and the maker of an Am-type response are watched at work, this difference immediately becomes striking. The Eu-type subject will direct his attention to the box, leaving the tray out of consideration except as a place upon which to put down the pieces. The Am-type-subject will leave the box on one side and focus his attention on the tray, eyeing it in a calculating and thoughtful fashion; he will collect pieces out of the box almost by hazard and at once begin moving them about on the tray.

This is particularly clear when a Multiform Pattern is being made. If a maker of this form of Am-type response can be induced to comment upon what he is doing while he does it, it becomes obvious that his attention is concentrated upon the space of the tray and that the pieces are significant to him because of the effect they have upon the large and small areas carved out of the whole space of the tray by the placing of pieces upon it. This attitude is so obvious to the American and so baffling to the European spectator that without Dr Mead's assistance in drawing attention to the writings of American authors on parallel subjects the conception of the Multiform Pattern as a coherent whole would have remained incomprehensible to the author. To the European mind there is something distressing in this diffuse and motor use of the materials of the test; just as, to the maker of the Am-type Pattern, there is something distressing in the tight interlocking and close compact arrangement of such Eu-type Patterns as Plates 25 and 26 and the lack of an intimate relation to space.

To the maker of Am-type Multiform, Composite and Diffuse Patterns the space of the tray is the essential element in the task. This may perhaps run parallel with a common American attitude to the outside world, in which unlimited material space plays so large a part, albeit sometimes unconsciously. The outside world it would appear, is to the Am-type American a space of as yet undisclosed potentialities, possibly fruitful, possibly hostile, upon which it is his opportunity and privilege to work. He can play upon it, carve it, manipulate it,

The Use of the L.M.T. in the Study of Cultural Problems

alter it, impress himself upon it as far as his capacities to wrestle with its qualities permit him to do so. For tools in his endeavour, he has himself plus his material instruments, but 'himself' comes first.

As Erik Erikson has phrased it*, 'This dynamic country subjects its inhabitants to more extreme contrasts and abrupt changes during a lifetime or a generation than is normally the case with other great nations. Most of her inhabitants are faced, in their own lives or within the orbit of their closest relatives, with alternatives presented by such polarities as: open roads of immigration and jealous islands of tradition, outgoing internationalism and defiant isolationism; boisterous competition and self-effacing co-operation; and many others'.

In the same way the Eu-type Pattern also reflects the average European attitude to the outside world. To him the 'outside' is a structure highly elaborate and complex which already exists with roots that go far down and a long way back. This structure is powerful in its own right and its powers are hidden within the structure itself, which has therefore to be carefully studied and intimately sensed in order that the individual may learn to embody in himself its characteristics; may discover his own powers, and through *co-operation* with the forces within the structure find ways of modifying and changing the structure itself and creating new varieties. Thus to the European constructor of a Eu-type Pattern the pieces are all important and in experimenting with them he discovers not only their qualities but his own power. To explain this to American readers, we might imagine it as a conversation between the test materials and the subject†, in which the pieces in the box address the subject directly, calling attention to their characteristics and their associations with each other and sug-

* ERIK ERIKSON *Childhood and Society* Imago Publishing Co. London, page 244.

† After the manuscript had gone to press Dr Margaret Mead drew the attention of the writer to some material of hers which the writer had not previously seen, viz: an article entitled *The American People* in a book *The World's People and How They Live* published by Odhams in 1946, now out of print; and to *And Keep Your Powder Dry* published in New York 1942, and later published in England under the title of *The American Character* in the Penguin edition. Reference to the first article, and pages 221 to 227 and pages 237 to 239 in the latter book will show that Dr Mead's estimates of certain essential qualities in the American character and attitude to life bear out in a striking manner the deductions drawn from Am-type responses which are outlined in this chapter.

The Use of the Test

gesting uses he might make of them. Nor is this a wholly fantastic notion, because this is in fact what occurs in certain psychotic subjects, who, as it were, enter into talk with the individual pieces*. The maker of a Eu-type Pattern may well bring the background into his work; as in a Spaced or Intermediate Pattern, using it to lighten the Pattern and give it grace; but when this occurs the spaces are passive and entirely subordinate to the dominant pieces. If the background is to play any part at all, it must be a highly disciplined one, and as in Plate 44, must be given a shape which is in some way related to the shapes of the pieces.

Study of Am-type Patterns suggests a radically different attitude on the part of the subject. Compact patterning to him suggests rigidity and compulsion; Defined Interior Space suggests imprisonment. As Dr Landes has expressed it 'there must be openings in the pattern, freedom to move in and out of arrangements of pieces and perhaps to escape from a present arrangement with the chance, if desired, of "starting afresh"'. Thus a close grouping of pieces at one point in the making of a Pattern can suggest a prior commitment to a specific *form* of action, and therefore restriction of opportunity; and unwillingness to alter commitments and plans in response to changes in the external scene. Or as Erikson has put it, 'The process of American identity formation seems to support an individual's ego identity as long as he can preserve a certain element of deliberate tentativeness of autonomous choice. The individual must be able to convince himself that the next step is up to him and that no matter where he is staying or going he always has the choice of leaving or turning in the opposite direction if he chooses to do so.'

The shape of space therefore when enclosed, must to the maker of an Am-type Pattern be irregular, fluid, capable of different interpretations, and by slight change in the arrangement of the pieces, of alteration in its significance, never too fixed or static. Irregularity appeals, and defined form repels. Interior space where it occurs should be indefinite in shape, sometimes deliberately tentative, interdependent upon and formed by the pieces that surround it, sometimes emerging as a consequence of the interaction of the pieces.

We have here, then, two markedly different, even opposite modes of response to consider: the Eu-type in which pieces are chosen and

* See Story Reaction, Chapter Two, page 58.

The Use of the L.M.T. in the Study of Cultural Problems

employed to produce defined effects displayed upon a neutral background; and the Am-type response where a vital and stimulating space (if one may be allowed such a phrase) is given significance by fluid arrangements of pieces selected for their power to change the look and meaning of the spaces they create within the total space of the tray.

Considered as expressing an attitude to life, it would appear that, in contradistinction to the 'patterning' of European life which is accepted by the individual as something given and independent of himself, the American when faced with a new situation feels it as a challenge to him personally. He has no inherited or learned pattern of response to use, consciously or unconsciously, as a point to start from, no impulse to take for granted the existence of an external patterning; and he is under a pressing interior need to 'make good'. The new situation is therefore felt by him immediately and intimately as relating to *himself*, as affording him an opportunity to find out what he can do, and in doing it to demonstrate the possibilities latent both in himself and in the tools available to him. This point has been illuminatingly brought out recently in a talk by W. H. Auden* on the B.B.C. in which he contrasts the different attitudes to a moral situation of Huckleberry Finn and *Oliver Twist*. The American is, in this aspect, a pioneer, an adventurer. He wants to 'play around' with the total situation confronting him, alter its bases, turn the inter-relating elements upside down and see what they will do, and then turn them back again and experiment once more.

The occasional response of Piling is a good illustration of this attitude, and can produce delightful results. The subject who makes a response of this kind will, without any examination of the individual pieces, take a handful out of the box and spill them about on the area of the tray and then stir them with a finger, altering a disposition here and there and critically examining the effect. This reaction is quite foreign to the attitude of the European.

The contrast between the two modes of response is particularly noticeable in the younger age groups. Whereas the young European, exemplified in the boy maker of Plate 84, was fascinated by the intimate relations of piece to piece and the changes brought about in the

* Published in *The Listener* for October 1st, 1953 under the title *Huckleberry and Oliver*.

The Use of the Test

effect upon each other and upon the total pattern of pieces added in one way or another, the young Americans studied by Dr Ursula Stewart and Dr Reiman try out the general look of colour and form and the way these interact with the space inside and around them, in order to produce something that they can feel as an individual expression of themselves. His own personality was not present to the English boy at all, but only certain personal attributes which it amused and intrigued him to experiment with and display, such as ingenuity and finger dexterity.

In short, the maker of an Am-type Pattern treats the component parts of the test as raw materials with which to experiment, without any feeling that the materials themselves may have essential qualities which have a right to respect and which would repay his study. This reaction to the test demonstrates both the strength and the weakness of much of the American response to the larger materials of life. Such an attitude displays the freedom, initiative, and practical inventiveness, and often also the courage and power of thought of the American attitude, from which such major achievements as the T.V.A.* or the Triborough Bridge have resulted. But the lack of feeling for the beauty and intricacy, the solidity and the significance of existing achievements – whether expressed in the customs or the cathedrals of Europe – leads to an iconoclasm and destructiveness which are deeply resented by the descendants of the original constructors of these things. Here too is an explanation of the carelessness of detail and the poverty of execution of many of the responses to the test collected in the U.S.A., in which (particularly among children) it is rare to get the complexity of organisation of Pattern that is relatively common in Europe.

At the same time there is in the Am-type Design a form of technique and skill which is only dimly understood by the European spectator. These techniques differ from those expressed in Eu-type Patterns because they are techniques of experiment and initiative; of discipline individually motivated rather than accepted from without; of personal adjustment to the difficulties of *personal* expression with unfamiliar materials rather than acceptance of the discipline of submitting personal desires to the possibilities of materials whose interior

qualities must first be understood if they are to be used satisfactorily. In this use a co-operation will be unconsciously expressed by the European between what he personally can do and what has been already achieved by those before him and of which he is the inheritor. Discipline, skill and subtlety can appear to a high degree in both varieties of response, but the quality of each is different. To the American, his own type of response is normal, what he feels is expected of him, an expression of the atmosphere in which he has been brought up. In the same way the mode of response of the European subject who makes a Eu-type Pattern is a response to the aims and ideals that are expressed in his material surroundings, which form the structure of his way of life, and which he has absorbed from his environment without being aware that any other mode of response is possible. His own mode of response seems therefore spontaneous and obvious for each subject, just as are the comments of spectators of different cultural backgrounds - from the '*Mais ils sont fous*' of the French when contemplating Am-type Designed Slabs and hearing that they are made by successfully adjusted people, to the 'My! How dull and limited' of the American spectator when confronted with a competent Centralised geometrical Pattern with Recurring Form.

When we go on to consider the treatment accorded the individual pieces, another set of interesting deductions comes to light. In selecting a piece to use in a Pattern, the European sees it as a piece of material with a quite definite shape and with definite relations to the other pieces. On the whole, what interests him most is to experiment with these pieces and to see what new effects can be gained by different positions and different combinations. As these effects are almost infinite in variety, most Europeans will use the material constantly with increasing pleasure to construct different variations of what they want to say, much as the musician uses different combinations of notes within the fixed framework of scale and tonal or melodic mode.

In this, the Eu-type maker's aim is exactly opposite to that of the maker of the Am-type Pattern. Far from being tentative, he wishes to make something solid, well articulated and clearly defined. He has no aversion to committing himself in this way; on the contrary, what he is interested in, in his response to the test as in actual life, is creating something that will stand by itself as an expression of himself within the accepted limits.

The Use of the Test

It should be made clear, however, that when we take into consideration American responses as a whole, so far as we are acquainted with them, by no means all American subjects make Am-type Designs. In the U.S.A. collections so far available for study, a definite proportion of the designs are of the Eu-type, but there is no evidence available as yet to indicate the exact proportions in which they are distributed.

The attitude of makers of Am-type Patterns to the pieces is more akin to the attitude to tone of classical jazz: pieces are slid up and down against each other, placed at odd angles to one another, or with irregular spaces between, so tipped up that one piece comes to be partly over another, and so on. The relation of individual piece to individual piece tends to be seen as embodying thrust and drive – qualities which are highly valued, especially in men when expressed in their relationships to the external world. In such Patterns, drive may radiate in several directions, signifying to the maker enterprise and variety of approach and of response to life's possibilities. Pieces with sides of unequal length placed touching one another are felt to be poised in relation to each other, tentative, experimental, able to shift if the circumstances shift and to take up new interpenetrative alignments to give new effects. The pieces themselves are handled more as large or small neutral items to which meaning and significance are given by the place they hold in the Pattern.

These differences in attitude to the material objects with which a response is carried out do, in truth, reflect a fundamental difference between the two cultures in their attitudes both to the self and to material objects.

To the European, objects have value because of the history of the associations which they have gathered in a long life, or because of their intrinsic beauty and of the skill that went into their production. He is interested in established patterns of behaviour because in them are enshrined a history of effort and feeling, built up slowly in the past, and representing a richness of response unachievable by a single individual, however gifted. He finds a fascination in submitting to formulae and experimenting with the intrinsic qualities of objects and customs in order to 'discover what they were about'; to get in touch with persons and objects differing from himself; to widen his personal experience and to increase his understanding of life.

Thrust and drive are as a rule little prized and only in certain walks of life; and when present are often concealed behind a striving for other objectives. Experimentation is objective, with the emphasis rather upon what is done than upon the person who does it. There is less curiosity, less pleasure in sheer novelty; and the need to 'make good' is hardly present at all.

When we turn to the handling of colour in responses a similar difference appears. The arrangement of colour in many Am-type patterns, if looked at from the European point of view, would almost fall within the classification Indiscriminate. But, as in the case of Designed Slab Patterns, although in comparison with Eu-type Patterns apparently indiscriminate disposition of colour occurs very frequently, the significance of the colour arrangement is entirely different. It is not indifference to colour which brings about the colour effects of Am-type Patterns, but a different attitude to colour as such, both in life and in design.

To the American, colour is living and is seen as emphasising or neutralising *movement* in Pattern (if the word movement is used in the sense defined below). So far we have come across no Am-type Design carried out either in black and white, or in a single colour — with the exception of white. Small Patterns carried out entirely in white hardly ever occur in European collections but have frequently been met with in American collections. The essence, however, of the use of colour in Am-type Patterns, so far as we are acquainted with it, is its detachment from the concept of symmetry, and its use either to point elements in the Pattern which the maker wishes, as it were, to fix upon the board, or to spread a pleasing but indefinite balance of colours over the whole board, as in the Diffuse Pattern in Plate 60.

In Eu-type Patterns also colour is important, but in a different way, very difficult to describe in words. Colour here is not so much not a living element allied with the movement, as representative of personal qualities in the subject. It is more a declaration of mood or an expression of emotion than an exercise in liveliness or an outpouring of energy; and, as the author has attempted to show in Chapters Seven and Eight, is of definite significance in many Eu-type Patterns.

We have said that colour is allied to movement, that it is in the expression of movement that one of the profound differences between Am- and Eu-type Patterns appears. This again is hard to put into

The Use of the Test

words, though practice in the study of Designs makes it easily perceptible. In Eu-type responses of normal people, movement is a quality of the Pattern. In disturbed or psychotic subjects it represents the movement of disturbed emotional states, and appears in the Design because such a Pattern is a mirror of an active or disturbed quality in the maker of the Pattern. The movement is definite, and is an inherent part of the integrated, usually geometrical structure of the Pattern.

In the Multiform, Composite, or Diffuse Am-type Patterns, on the other hand, constituent parts of the Pattern move about the tray and the whole pattern has a fluid appearance: it flows over the surface of the paper. Thus the relations of the different elements of the Pattern to each other resemble the relations of groups of dancers to each other in a ballet, whereas the relations in a Eu-type Pattern might rather be compared to the movement of a troupe of acrobats.

This difference in presentation of movement mirrors a very real and fundamental difference between the structure of American and European life and attitudes. At the same time it contains a paradox. None have moved further, or voyaged more consistently or widely throughout the ages than the British people; but this movement is, like their Patterns, a movement away from and towards a *centre*. Relatively speaking, neither the British nor any other European people move much about the area of their own country. Americans, on the other hand move constantly to and fro and up and down the confines of their vast country. This country has no *centre*. Its great cities are for the most part on its borders. They are the practical expressions of its life, and wherever the eye may look they have a certain uniformity. It is possible to travel from coast to coast, weaving one's own pattern and not too greatly interfered with by the need of conforming to some other patterning. All the world has come to the U.S.A., bringing their richness and characteristics with them. Just as the user of the L.M.T. selects one or other colour, or one or other shape, to express his individual personality by the way he places them here or there over the surface of the tray, so the individual American can make use of which of these aspects of his inheritance that he will. Everything to him is the same and yet not the same; it repeats in structural atmosphere but not in feeling: and out of all these differences the individual American must, for himself, work out his individual style.

The Use of the L.M.T. in the Study of Cultural Problems

Not so the European. Where he is born, for the most part there he dies. What he has inherited he hands on — altered, smelted down and perhaps with its central purpose changed, but still recognisably the same. If he moves to another land, he tends to create again in his new home the pattern of the culture from which he comes, and to embody within his new civilisation the values he has inherited from the old.

This brings us to the last element in this study of differences: the composition of the Patterns. To the European, repetition is of the essence of patterning. Only when Eu-type Patterns in great variety are laid side by side with Am-type Patterns does the intrinsic nature of this feeling fully appear. Balance of colour and shape, repetition of items in different aspects, are within the marrow of the bones of the European outlook. This is not repetition in the psychological sense, but the turning round of facts and feelings into their different aspects in order to appreciate their nature. This brings with it a feeling for the right of the people to their point of view, which cherishes and enjoys differences, while holding fast to individual conviction.

In the U.S.A. the feeling for balance takes other forms. Space is opportunity not structure; symmetry tends to represent limitation. Balance is balance of effort, not of perception; and the stress is on execution within freedom, perfection of adaptation of means to ends which are *new*. Thus exact repetition does not occur in Am-type Patterns. The balance achieved is freer and more subtle. The skill is kinaesthetic, and the structure wedded to space, both external and internal, and implied in the very choice of pieces itself. It is interesting that in Europe it is the artists who understand most about the Am-type Patterns and to whom they appeal, and it is among the younger people that the European parallels to Am-type Patterns appear.

Such a sensitive instrument does the L.M.T. appear to be, that a quite perceptible difference can be observed between the general trend of responses made before and after the 1939-45 war, particularly if Designs from certain age groups in the periods before and after the war are compared.

The question now arises as to whether other types of difference in response to the L.M.T. would be found than have already been studied in Am- and Eu-type responses, and what effect the Am- and Eu-type reactions would have upon the reports of American and

The Use of the Test

European workers on responses to the L.M.T. of non-Western peoples.

3. BRIEF REPORT ON JAMAICAN DESIGNS COLLECTED BY DR KERR

Here two pieces of work are available for study: a large number of responses from Jamaican children collected by Dr M. Kerr in 1949, and a group of responses from the Manus tribe of the Admiralty Islands collected by a member of Dr Margaret Mead's expedition in 1953. These two pieces of work offer admirable opportunities for study, for not only do the cultural and sociological backgrounds of the two groups of subjects differ widely from one another, but the observers also exemplify in themselves the Eu- and Am-type outlook. We will start with a study of Dr Kerr's collection. Here the differences are not of types of Design or attitudes to the constituent parts of the test, but of Patterns which, while somewhat similar to those found in Europe, occur in different combinations. Dr Kerr took the L.M.T. with her as one of the tools of study in her field work in Jamaica, and has made a preliminary report upon the results in her book *Personality and Conflict in Jamaica*.

The object of Dr Kerr's work was to study the relation between culture and personality in some Jamaican peasant villagers. The L.M.T. was used specifically as one of the tools employed to gain access to the deeper levels of the basic personality of a colonial people, who live within a social structure conditioned partly by English patterns of life and partly by the necessities of life in a rural area; who suffer badly from poverty and malnutrition; and who still retain attenuated memories of Africa, and a more potent and recent remembrance of slavery.

Here again unexpected features emerged. Jamaican children responded well to the test and enjoyed doing it, and the results showed considerable uniformity. But these results pose problems of a different type from those presented by the American/European comparisons, since the *use* made by these children of the materials of the L.M.T. was similar to that found in Europe. That is to say, the Patterns made by the children were geometrical, the pieces being fitted together in the main according to their geometrical qualities; and the

types of Pattern made were those normally found among the responses of European children. Taken as a whole, however, these responses embodied a paradox. The forms of the Patterns made by the Jamaican children were those of retarded European children or of children of an age much below the chronological ages of the Jamaican children. On the other hand, when the same type of Patterns occur in Europe they are limited in scope and number and give an effect of poor inherent quality in the subject or of early age; whereas in Jamaican children so many Patterns are made by each child in a single response (see Plate 143) as to give an impression of exuberant energy. We are confronted therefore with the odd picture of abundant energy expressing itself in endless repetition of elementary forms.

Here then is a new type of problem. In the 'American/European contrasts we are confronted with fundamental differences in the *form* of the response. But in the responses of Jamaican children, groupings of pieces which in European responses are related to stages of development appear in identical forms but independent of chronological age; while Patterns which in Europe are characteristic of different ages, here appear simultaneously and in great abundance.

Another point of difference between responses of European and of Jamaican children is that quite apart from the question of immaturity, the European children from whom our knowledge of retardation in development has been drawn (as this is expressed in the L.M.T.) were children seen one at a time, generally at the request of their parents, because of some deviation from what was expected of them by their families. Thus the failure in the individual child to develop normally which was reflected in the Mosaic response was a characteristic of that individual child. In the Jamaican children, on the other hand, the similarity of the results obtained from all the children tested, suggests the presence of social rather than of individual determining factors.

• Her study of the environment within which the Jamaican child grows up led Dr Kerr to examine the paradox of the Jamaican Mosaic responses by comparing them with groups of English children, comparison of whose responses to the L.M.T. with those of the Jamaican children brought out most suggestive similarities and differences. Examination of these led Dr Kerr to formulate a tentative

The Use of the Test

theory that the differences between the Patterns of Jamaican children and those of children of comparable age and intelligence tested in Europe arise from specific factors in the environment of the former. These factors are those specifically concerned with the rôle deprivation. For instance, to be coloured in a white orientated society; to have a facile education so far removed from reality as to be an impediment rather than an aid; to be so much at the mercy of rôle impairment as to be uncertain whether to call in the magician or the doctor.

These factors impinge upon them in a manner which tends to retard maturation and even permanently to check it, making it difficult for children in such situations to get along adequately, whether in the individual society of England or the Europeanised parts of Jamaica*.

At the time when Dr Kerr put together her report on this collection the analysis of Am- and Eu-type responses and the examination of the possible significance of these as set out in this chapter, had not yet been made. It is interesting therefore to note that in her examination of her own collection (and in contrast to the mode of analysis of Manus responses made by Dr Mead and her colleagues) Dr Kerr is responding to her material as a European. Her attention is given to the use the children make of the pieces in the box with the emphasis put strongly upon form rather than on colour and at no point does Dr Kerr mention the space of the tray. What interests Dr Kerr in her examination of her material is the power of imaging the pieces in different positions and of combining them geometrically to produce Representational Designs or symmetrical Abstract Patterns. It is clear that when a worker from one country contemplates a collection of responses from individuals of a different culture and level of development something takes place like that which Dr Mead describes as occurring in the mind of an anthropologist: 'Out of our storehouse of our own and other anthropologists' observations, whether these are held in solution in one's memory as phrases, as sounds, or neatly catalogued on cards that must be flicked carefully through searching fingers, we draw the material that will help us form hypotheses, check the usefulness of those hypotheses, and suggest new lines of work.†

* MADELINE KERR *Comparative study of Deprivation in Jamaica and Liverpool*; a paper read to The British Association, September, 1953.

† MARGARET MEAD *Male and Female* page 45.

The Use of the L.M.T. in the Study of Cultural Problems

In carrying out this process what comes into Dr Kerr's mind is the long experience she has had of European responses and particularly of the responses of European children.

As has been several times emphasised in this book, European children focus their attention on the pieces and are unaware of the space of the tray except in so far as it must be taken cognisance of in such patterns as Edge, Frame, Frame and Item, or any of the Patterns which cover or make use of the whole area of the tray, or if space must be found on the tray for a sequence of different Patterns in what eventually will be a Collective Pattern. Responses therefore which result in the production of a number of small Symmetrical Patterns placed independently of one another over the area of the tray become for the European tester Collective Patterns of Items, each of which should be analysed in relation to its size, its use of the pieces and distribution of colour, and compared with similar productions by European children. A study of Jamaican patterns from this point of view has led Dr Kerr to formulate a concept of Pattern-making which divides completed Patterns into 'broken' and 'whole' and makes use of this grouping for the comparative analysis of British and Jamaican responses.

4. DISCUSSION OF A MANUS PATTERN

When we turn, however, to the reports on the responses of Manus subjects, made by Mrs Lenora Schwartz, a member of Dr Margaret Mead's 1953-54 expedition to New Guinea, the focus of the report is on the general response of the subject and particularly upon his attitude to the space of the tray.

It is tempting to launch into a description of the total response of Manus subjects who make patterns superficially resembling those of Jamaican children (illustrated in Plate 143) but to do so would carry us too far afield; instead we will consider the report made by Mrs Schwartz on the response of a young man of twenty-five (see Plate 144) which, while it does not compare with Dr Kerr's material, yet brings out the difference of attitude in the observer.

The maker of Plate 144 was, as it chanced, not of pure Manus stock as his father was a Japanese. The mother, however, had returned to Manus country before the birth of the boy and he was

The Use of the Test

brought up entirely within the Manus culture. It is therefore included not as an example of a response from a typical Manus male, but as an example of a study of a response to the L.M.T. from the point of view of colour and movement, rather than of the structural form.

Looked at from the European point of view this Pattern is composed of two oblong strips of closely integrated pieces, the one consisting of two and the second of three sections, connected by a narrower strip with oblique edges which separates into two longitudinal strips. In every case each piece used is fitted carefully to its neighbours on either side in a Compact fashion (and often to those above and below as well). The colour appears to be a mixture of deliberate and indiscriminate use.

The report of the construction of the Pattern, however, brings into the study of responses to the L.M.T. a new angle of approach which is in harmony with the general attitude expressed in Am-type Patterns. This report considers in turn first the process of the making in relation to the form of the Pattern, secondly the choice of colour and development of the arrangement of colour in the Pattern, and further the movement expressed in the use of colour.

Report according to form on Plate 144 made by P.K. of Peri.

8.24. As soon as L.S. opened the box he smiled. He was told to make what he pleased.

He started immediately and started by fitting the pieces together continually changing them around so that no two pieces remained in the same position for more than five seconds. His figures were chosen by colour and from the beginning it was obvious that he was conscious of colour balance and colour movement to give what he was doing direction (or perhaps I should say he did this unconsciously). His first colours were red and yellow. He laughed a few times and with all of his enjoyment of the test, he was nervous and his hand trembled. He handled the pieces with great delicacy so that I had the feeling they would break with rougher treatment. He did not hesitate to leave rejected pieces at the side and then to go back to them as a source for continual building of his Design. The Design was started from the left side and continued out across the top of the board. The centre of the original Design served as a centre from which other colours radiate so that a red centre would lead out to two small red triangles at its side. A yellow centre would lead out to two small yellow triangles at its side. This was done five times with five different figures so that it could not be mistaken for an accident. Using this idea as his main point of direction he continued on to the second row which grew out of the first row.

Even though the growth of the design went toward the continuation of the

The Use of the L.M.T. in the Study of Cultural Problems

second row with additional rows added, he also worked each figure as an axile balance Design. So that first one figure was built from side to side then the next from side to side until the whole row was finished. The main concept I feel could be said to be conceived from one part continually growing. He worked in a similar fashion that many children do, only he worked with form and they work with space. The children make one single form, then another which does not have any particular relationship, yet they continue on a level which is unconscious so that they unconsciously strive to fill up the space . . . so that the space becomes a thing which gets smaller and smaller and when it is hardly there, the thing is finished. P. also saw the diminishing of space and worked with the space as a factor which will determine the end of his Design. But he also worked on another level in which the form that is consuming the space is also important and although he did not see this form as a whole he saw it as something which will grow into a whole. He built up from small complete parts but worked on a more mature level in that he could co-ordinate these parts and co-ordinate them so perfectly that one not seeing the process of the Design, but looking at the end result, would feel that he had conceived it as a whole.

Yet there is still another factor to consider and that is colour which is so perfectly related to Design that from one point of view it appears that his first figure, once put down, determined the end result of his whole design, because it set the Pattern which grew out of itself.

8.40. He destroyed his Design and started a Design at the extreme left. Then he destroyed this and cleared the board of all of its pieces. Some pieces were put on the table, some in the lid. There were some parts of the central part of the Design left, so he moved this up. Actually his destruction of the Design was never a complete one. Instead he would first tear down one row then decide to change the centre and move it to the top part then he would seem annoyed with the whole thing and start all over again. He kept building toward the bottom—he started to shape the space as part of the Design so that there were a series of projecting pieces which gave the central bottom space a ragged shape but both sides were ragged in the same way so that it made an appearance of an interesting space with an equal Design on both sides. He gradually started to fill the space in. He looked over his sides and filled them in with squares. The squares were put in to match the triangles beside them. He then put in a red and a blue triangle on one side and did the same on the other side, but inverted them so that you had the colour balance but with a little variation. Inquiry by L.S. asked if he liked the test he said 'Yes. It belongs to play. Me makim nothing.' Said at first he tried to make a straight line from one corner to its direct opposite on the other side running from left to right. He felt it was a failure and started it over with nothing in mind except to make play.

Colour Preferences : Black, Blue, Red, Yellow, White, Green. When colour rather than form is considered the following is the report on this pattern:

The Use of the Test

P. started his first figure using absolute contrast, black against white, creating diamond shaped figures by placing one equilateral triangle above another. This he continued through until his first line covered the top of the board. The centre of each figure which is the diamond shape surrounded by four scalenes indicated the colour which would be set immediately under the centre colour so that a white diamond was balanced over a white isosceles triangle, a yellow by a yellow isosceles, a red by a red isosceles, a blue by a blue isosceles. The spaces created by the line of isosceles triangles were filled in with colours not particularly relating to the colour scheme or following a colour through and creating the direction in which the colour directs the lines in which the eye will move, but rather they were placed as colours which would serve as variables, or rather nuances of colour that gave the stricter pattern of colour, contrast and momentary pause. As the combination of the diamond and the isosceles triangle create a whole figure giving it greater dominance over the patches of colour that run through in the way that pauses because they are not continued as a colour pattern and are not carriers of further colour designs, aids the eye to move across the board following the diamonds and lower isosceles but being caught up with short stops created by the colour patches. This can almost be compared with the Manus type of body movement or perhaps thought patterns. In the body movement instead of getting a visual impression that their bodies have a flowing movement there rather exists many short movements that are so continuous and evenly distributed that superficially it appears that the body has a flowing movement, but more careful observation shows sequential movements.

On the third row of this design we have a new type of variation. Instead of a symmetrical continuation of sequential movements broken up by patches of colour as pauses, we have an opening up with a slight off note going from side to side. So that the yellow diamond which was continued by yellow isosceles seems to have two arms: one smaller going towards the right and one larger going to the left, therefore the tendency to go to the right moving across the board in this direction, is stopped by the weight of the larger square pulling the eye back. We then have a new kind of pause with the eye trying to move across, going back then going forward, instead of the first type of movement which was go, stop, go, stop; we have go, back, go, back. Between the two types of movement, this movement of trying to go forward but being interrupted by the back movement also has in its configuration a level that we did not have before, a level that is created by the back movement that is placed on the bottom row or rather the next row, so that the back movement also goes down, and with it brings the eye down.

Now we have three movements going on at once. Across, back and down. The patches of colour filling in the spaces between the squares which serve as back notes are again used as forms to act as contrast for the squares so that they also lack the quality of being forms which add to the colour direction and act more like nuances giving light to the total design as they combine with the other colours. The combination of the yellow next to the blue varies the

The Use of the L.M.T. in the Study of Cultural Problems

yellow slightly from a yellow which is placed next to a red (we might say that the colours placed which do not have direction, but rather pauses, have the additional quality of colour spark, giving the colour next to it new light). The sixth row down again starts the pattern which was made at the top row. We then get the feeling as our eye starts to see the pattern as a whole that the top row and the sixth row act as patterns which hold together the small patches of colour throughout the whole design. Even the smaller figures which serve as directional paths for the colour to follow become colour patches when looking at the total form. We therefore feel the need to have the larger forms to hold them together which P. has presented. Yet this row has in addition to the regular pattern of the first row, sides which also have a spreading pattern, having a similar quality to the spreading of the square and the inverted isosceles triangles in the third and fourth row. (If you count the combination of the two large triangles creating a diamond as one row, then it is on the third and fourth row) the spreading out at the sides created by the five scalenes in white, at the left side and the five scalenes in yellow on the right each having the additional form of an equilateral triangle one white and one yellow, helping to give the illusion of the form spreading. The direction of the spreading goes up in contradiction to the total pattern of the design which goes down. Therefore the two movements meeting create an abstract feeling of a closed figure in which two forces of movement meet, creating a break in the pattern which is started by the third row up from the bottom meeting the sixth row from the top. The bottom oblong shape continually changes from a figure holding up the top formation to hanging from the top formation. This break in the total structure is only temporary, for it is again organised by the directional colour that runs through from top to the bottom. Let us follow this through by going back to the top.

The downward pattern of the white diamond does not continue in the same way that the yellow does. This is true also of the green diamond on the opposite side. The yellow which is a formation in itself, in that it is not balanced at the extreme right by a formation equal to it, creates an imperfect variant that scatters itself down the board on the left side. The white diamond on the top row also scatters instead of going down to the bottom, but reorganises itself in the oblong formation at the bottom. The red diamond on the top row continues in a regular pattern down; the direction although not in a straight line continuing down by a side movement. The red diamond, the blue, the black then follow this movement. Two red diamonds balanced on a point of the red isosceles picked up in colour by a red square which moves at the side toward the left then on the next row moves to the right bringing the direction of this colour back to the centre of the design. This is done by a more predominant form which is now a diamond shape again. This diamond shape is again placed on a point which has a precarious feeling about it and then is given strength by the two isosceles on each side of the triangle holding up the diamond. The reason that the scalenes appear to give the diamonds more support, is that they are of the same colour so that the eye associates them with

The Use of the Test

being a part of the diamond, almost like two legs spread in support of the body (which in this case is the diamond).

Going back to other subtle details. If the white scalenes on the second and third row from the bottom plus the inverted equilateral triangle were not broken up by the yellow scalenes, or as with the yellow grouping on the opposite side not broken up by the black scalene, then there would exist a greater weighing downward for the concentration of the colour that would fasten the eye to that spot which would have more strength visually with everything else being so broken up in colour. But the interruption created by these notes, instead of making a pausing note, as it does in other pattern relationships at the top serves just the opposite function in that it jumps and moves the eye away from the group. Yet there is enough massing in this group to create a rest for the eye before it continues down toward the bottom.

Centre movement. The whole configuration seems to have a centre movement in which the three directional colours of red, blue and black form a line going toward the centre of the design. In addition to the central movement of colour, the shape of the design turns in rather than spreading out. The three rows between the two rows of diamonds in the centre of the board have the sides turning in, then the figure continues straight down not going out again. The strongest movement is that which is created by the top row which moves across the page from left to right (perhaps it is the fact that the lighter colours of white and yellow attract the eye before the darker colours of green, black and blue, cause the eye to start at the left rather than the right and emphasise this left to right direction). P. who also having the ability to read would start in a movement across from left to right, the eye is unconsciously made to move in that direction. Yet not taken right out of the figure by this movement because it is stopped by the three squares of green, red and blue at the end of this movement. Echoing on the other side is a repetition of the three squares but in very bright intense colours that have more colour intensity than the red, green and blue, and therefore have greater colour attraction. Thus we have two things which help the eye to remain on the top row, without letting it move off the board, that is the blocks created by the squares on either side and the colour intensity of the squares on the left hand side.

Colour levels looking at the design as a whole. The intensity of all of the colours so equally spread, creates a single picture plane in which none of the colours break through this single plane. But within this picture plane, you have colours moving back and forth, so that it appears that the white covers or scatters throughout the board, coming forward, then when the red attracts the eye this has a similar effect, then the blue and lastly the black, each in sequential movement going from left to right seems to move up.

The total feeling of colour and movement is that of an equal spreading through, in which there is movement in all directions, equal intensity of colour and repetition of movements moving sequentially. All colours in P's mosaic have all colours conceived of as approximate balance to any other colour. In addition to the intricate colour play he also created an overall form with

The Use of the L.M.T. in the Study of Cultural Problems

the colour pattern being modified not only in terms of itself, but in accordance with this overall form. The form is solid with only two closed off spaces.

(I wish to state that all this complexity which was created by P. was not done on a conscious level or at least I have no way of ascertaining the extent of conscious patterning according to a preconceived *gestalt*).

An interesting fact about these admirable notes is that while all possible aspects of colour *movement* are analysed, no mention is made of the fact that in the top row of diamonds each of the six colours are used in turn, and the size of the board is responsible for the fact that this row of diamonds fills all of the space which can be completely and symmetrically covered, leaving room on each side for another symmetrical feature, the squares. It is interesting that the report makes clear that a symmetrical sized space was left on either side of this row and only later filled by squares.

The next point not noted about colour is the correspondence, taken from left to right, of the order of colours in the top diamonds and the central squares. In the same way the order of the colours of the lower row of diamonds repeats the central theme of the top row, the three equilateral triangles whose bases make the bottom row of the figure are in the remaining of the six available colours. In the same way the framing scalenes in the top row also represent the six possible colours, and except for the white/yellow are arranged in strong contrasts.

While the oblique colour carriage of the isosceles triangles from the top diamond is observed, the point is missed that each of the isosceles in the first row corresponds to the framing scalenes two steps to the left, and the only casual or variegated row is that of the lowest line of isosceles. Furthermore it is a point of considerable interest that blue/black (which is the maker's preferred colour) forms the centre of the lower oblong mass which is the base and support of the whole figure.

Further the sloping-sided mass of white and yellow in the base repeats in structure the general shape of the main pattern with the sloping sides of the centre part and the horizontal base.

Thus this Pattern and the descriptions of it given by an American and a European observer neatly exemplify the different aspects of a given design which are looked for by exponents from the two cultures. The eye of the American observer looks for movement and

The Use of the Test

colour balance and tends to miss structure. The eye of the European focuses upon structure in regard to form and colour and would not think of following out the colour movement and colour balance. The Pattern itself also combines within itself elements of both approaches. In Eu-type classification it is a Compact Pendant successful Abstract Pattern symmetrical in form about a vertical axis, using all shapes and all colours, the colour being used partly deliberately and partly indiscriminately.

No example has been met with in any European Patterns of the use of colour and form as in the top rows of this Pattern. In its mode of construction also it belongs more to Am- than Eu-type grouping. The form of the Pattern is to some extent that of the Card House type.

One further point of interest about this Pattern lies in that part of the description where reference is made to the mode in which children construct their Patterns. If this comment be compared with the description of Plate 108 the two modes of perception of children's reactions can be seen. It is perfectly true that a certain number of children place pieces one after another on the tray, either in addition to pieces already combining to form an Edge Pattern, or an arrangement of rows across the tray, as in Plate 79, or completing small patterns one after the other which are placed anyhow on the tray wherever room can be found as in Plate 143. But the interpretation given to this phenomenon as far as the intentions of the child are concerned can either be 'continues to create form (or to elaborate the pattern he has begun) as long as it is possible to do so', or (as suggested by Mrs Schwartz) 'unconsciously strives to fill up the space so that when it is hardly there, the thing is finished'.

It seems certain that there are two varieties of reaction among small children in regard to form and space. In the one concentration is wholly on the form, in the other partly upon form and partly upon space; there is at present insufficient evidence to determine whether a pure concentration by a small child upon 'space to be filled' is a reality or not.

The material in this chapter is intended to be illustrative only of the use of the L.M.T. for the study of different cultures; at the time of writing only a small portion of the material available has been analysed, and what has been cited in this chapter is intended to explain two points, neither of which can at this stage and in a book of

The Use of the L.M.T. in the Study of Cultural Problems

this nature be adequately illustrated. The first of these refers to the mode in which the structural details of the Designs themselves as presented when completed are used to elucidate the nature of the attitudes and preoccupations in subjects coming from a culture unfamiliar to the tester. The second of these points is the enrichment of understanding, both of the test itself and of the responses made by subjects of the tester's own culture, which can come from study of responses to the test of subjects from other cultures. When collections are studied from within one culture only, deductions tend to be made as for example in the earlier writings of the present author, which in reality belong to that culture alone, and the responses are not seen in a wider setting. From this errors of judgment arise such as, for example, have been illustrated in the analysis of Am- and Eutype Slab Patterns. The test therefore illustrates not only the range of phenomena that can appear among different peoples but the importance of a conscious knowledge by the investigator of the bias of his own mind.

CHAPTER ELEVEN

THE PRESENT POSITION

Illustrations referred to in this chapter in the order in which they occur :
Plates 105, 106, 104, 16.

It will be obvious from the general content of this book that the atmosphere in which the Lowenfeld Mosaic Test has developed has been that of psychological medicine. This could hardly have been otherwise since the normal work of the designer of the test lies in this field.

There is, however, a certain disadvantage in this orientation since the focus of attention is thus shifted from the broader questions which gave rise to the creation of the test to the narrower ones of correspondences between individual traits of the subjects who respond to the test and the qualities of the Designs they produce.

However, as we have seen in Chapters Two, Three and Four, in spontaneous Designs made with mosaic pieces certain combinations of pieces constantly reappear, thus forming a kind of standard language of design. In these Designs we come back to phenomena suggestive of those, contemplation of which gave rise to the test; that is, the geometrical patterns of European folk embroidery. The study of test results could therefore be approached from another angle: the matching of recurring Patterns against sociological phenomena. The work done by Dr Kerr, briefly reported on in the previous chapter, opens up one such line of investigation; and a tentative essay has been made by the author in the analysis and comparison of Designs made by all the members of a family, not from the point of view of individual significance but of correspondences and differences among the different members of the same family. Particularly interesting effects arise when, as so often happens in the post war world, the members of the family, although they arise from a common stock, have gone to live and work in several different countries. A series of studies

The Present Position

at a given moment¹ of several generations, either resident in similar sociological conditions or scattered in very different countries or surroundings, might well produce significant material. The designs of the two sisters (see Plates 105 and 106), show the remarkable similarity that can appear spontaneously in members of the same family, independently of contact between them.

A very interesting study of the designs made by twins was carried out by Dr Kerr in the years between the First and Second World Wars which unfortunately was never published. This research was unfinished, but the conclusion which might be drawn from what was done was that Mosaic Patterns of identical twins were more alike than those made by fraternal, like or unlike, sex pairs. These results were statistically significant. It is possible, therefore, that there is some innate factor which influences the type of Pattern made. What it is, and what its relation is to culturally determined factors, is entirely unknown. It is to be regretted that space could not be found in the plates for illustrations of some of these studies of twins.

How far such similarities as shown in Plates 105 and 106 are expressions of correspondences in individual personality structure and how far they arise, as for example in Am-type Multiform Patterns, from a common cultural background, is a question to which we have as yet no clue.

From the cultural point of view work is being carried out at Makerere College in Uganda and in Natal. A preliminary survey of the material collected to the date of writing suggests that all the points made in this book in regard to the structure of responses and the registration by the test of cultural differences which appear in subjects, are likely to be supported, and our understanding of the possibilities of the test further developed. Reference has already been made in the previous chapter to Mrs Lenora Schwarz's use of the L.M.T. as one of the tools of investigation in Dr Margaret Mead's expedition of 1953-54 to the Admiralty Islands. Only a small portion of this material has yet been analysed. In the British West Indies Dr Theodora Abel has included the L.M.T. in a battery of tests used in a recent piece of field-work in Montserrat. Tentative beginnings are being made in one or two other non-Western areas, and the material so far to hand is encouraging.

A schema of suggestions for modifications of technique in work

The Use of the Test

with non-European peoples has been drawn up and will be found in Appendix D.

In Europe, opportunity has not yet offered for the detailed comparison of results obtained in different countries, but it is to be hoped that co-ordination along these lines will become possible, so that the suggestions put forward in this book may be tested. It is particularly essential that developmental studies should be carried out parallel with the experimental grouping reported on in Chapter Five in order that these findings may be checked. The second point of interest would be a re-examination of the variations in response found by Dr Kerr in children coming from different educational systems. Finally it is of first importance that as soon as possible an exhaustive study should be made of the developmental stages through which those American individuals pass who make Am-type patterns. It is encouraging to know that a developmental study of children from two to seventeen years has been undertaken by the Gesell Institute. This study will cover a hundred cases at each annual age level from two years through sixteen years of age. Many of these individual cases are being followed longitudinally from year to year. Thus there will not only be available cross-sectional data but longitudinal as well. The study is still in an early stage, but the Institute reports that to some extent the kinds of Patterns observed at the different ages fit in with what they know of the 'personality' of the age levels in question, and also to some extent match the trends observed in the study of children's response to the Rorschach test.

In the material reported upon in Chapter Five only ages up to sixteen have been covered, but material collected from British High School boys and girls and from undergraduates, which has not yet been fully analysed, suggests that studies of these ages would offer useful information along a number of different lines. For example, in one study made of women students in a single London college it was found possible through analysis and comparison of their Designs to identify the faculty of a number of students. As this was only in the nature of a pilot study, the fact of identifiable difference having been established to the satisfaction of the investigators, the work was not carried further and no statistical examinations of the material were made; it is therefore not known whether the differences observed would have proved to be statistically significant, but the results were

The Present Position

of sufficient interest to suggest that a detailed study of this kind might well produce results which would be of value to careers officers in schools and for vocational guidance.

The work with the L.M.T. in industry referred to in Chapter Seven, while also too limited to be in any way conclusive, suggested that an extension of this experiment to well defined problems in personnel selection for industry, if carried out with care, could reduce failures in training programmes and increase efficiency of selection procedures. The great advantage of the test in this field is its applicability to all ranks of workers, from the lowest grade of unskilled labour to the directorate; and, as indicated in the discussion of Plate 104, it also has value in the consideration of candidates for promotion.

An article in the January 1946 issue of *Building* gave rise to the suggestion that the materials of the L.M.T. would be of value to students of architecture, of advertisement and of design, as tools for exploring the possibilities of design, owing to the flexibility of the material as compared with pencil or paint. Plate 16 is an example of the use of the material for the production of Stylised Design.

Returning to the study of individual character, work with the test in the field of delinquency has only just begun; but once more, the results from a pilot study of selected inmates of a civil prison suggest inherent possibilities in the test in this field, particularly if used as an element in medical examination. In the case of juvenile delinquency the test is proving of definite value, but no work has yet reached the stage where it can be reported upon.

In the U.S.A. a number of interesting projects are under way, including a validation study by Dr Monroe Levin in New York, and work being carried out by Dr Ellenberger at the Menninger Clinic.

In a number of European centres the L.M.T. has come to be a standard instrument for use in the out-patient departments both of children's and adult hospitals. No work has yet been initiated in in-patient wards, although it is probable that interesting material could be gained as to the mode of return of functions of personality through the progressive study of patients recovering from serious physical illnesses where changes in personality have resulted from organic illness.

Perhaps one of the most fruitful fields in which the L.M.T. could increase our understanding of the processes at work within the subject

The Use of the Test

is in the study of the psychoses. In Chapter Nine Dr Ellenberger has outlined some of the possibilities latent in this field; but only personal experience can show how vivid can be the insight gained in this way. In the author's experience this is particularly true with prolonged study of young schizophrenic patients, especially those undergoing psychotherapeutic treatment. It is a very real deprivation, both to writer and reader, that it is not possible, within the scope of this book, to give illustrations of a series of Designs produced by a patient of this type, since the changes which take place in the Designs made provide such a vivid picture of the changes taking place within the patient himself, which he is quite unable to express in any other way.

Study of psychosomatic conditions by the L.M.T. is also in its infancy; but enough has already been accomplished to show the emergence of certain groups of characteristics which seem to belong to certain psychosomatic conditions. Only detailed comparisons with control groups will show whether these can be substantiated in a wider field, or whether the differences and resemblances so far observed will prove to be of diagnostic significance. But serial study of individual cases has shown that the Designs produced can be of undeniable assistance to a physician when making crucial decisions during the conduct of a case. Once again it is the light thrown by the Designs on the alignment of factors within the personality that constitutes the help given by the test; here the whole response should be taken into consideration and not only the final Design.

Another fruitful field in which work has, as yet, hardly been initiated but in which good results should be obtainable, is in the use of the test for the assistance of teachers of deaf and partially deaf children. Here the test could be of real help both to teacher and child: to the teacher in assessing the qualities of children to whom verbal tests are inapplicable, and to the child in establishing creative communication with the adult. If the conclusions arrived at by Dr Ellenberger in regard to organic mental disease are substantiated by other workers, it would be worth while investigating the responses to the test given by brain-damaged children, as it might well be as useful as work with the organic cerebral conditions of adults, both for diagnosis and for assessment of improvement.

Study of the processes of ageing has also only just begun; but the differences between the Designs of different individuals of the same

The Present Position

chronological age suggests that extensive study of classes of individuals from the fourth to the ninth decade of life could establish a curve of declension parallel with the curve of development of the child, against which the abilities of any given individual could be compared. Such a study might well give assistance in the much debated question of the suitability for continued employment of individuals in the later age groups by providing undeniable and objective evidence of capacity or incapacity.

It is not possible at the present stage to do more than indicate these fields since in each only a few experiments have been made. Some experiment has, however, been made in all of them, and in none has the slender experience gained been negative. But the warning needs to be reiterated that there is no magic in the L.M.T., and that the field of application of a blind use of the test is strictly limited; so that if experience is to be gained and results obtained that will stand the test of time, it can only be through careful and detailed examination of its possibilities along the lines set out in this book, or along any others in which the same principles are observed.

Nevertheless, however carefully the basic principles of analysis of L.M.T. responses are applied to individual results, the fact inevitably remains that it is through the light thrown by the study of one culture and one group upon our knowledge of responses from all other groups that progress is made. In order that such a pooling of results may be possible it is essential that some centre should exist which is in touch with the forms of work being carried on and able to pass on relevant material gained by one group of workers to others. Since the same economic obstacles to publication of actual Designs will remain long after the publication of this book, the author and the staff of the Institute of Child Psychology, London, would welcome it if those planning work with the L.M.T. would get in touch with them at some time during the carrying out of the project, with news of the work undertaken and the results obtained. In this way a register can be kept of work in progress, which will assist the diffusion of knowledge.

The best introduction to an understanding of the L.M.T. is to use it oneself, to record the Designs made and to file these away for future comparison, trying with the making of each Design to be both as relaxed and as inventive as one can, and noting on the record whether one has found the result pleasing, and if unpleasing, in what particu-

The Use of the Test

lars. In this manner, and through study of similar series made by individuals whose personalities are familiar, insight can be gained into the manner in which mood and moment interact with the permanent structure of character, and in which aspects the abiding qualities of the personality are reflected in the Designs.

Scoring During the last two years considerable progress has been made with the devising of a scoring-procedure for the test, and it was originally designed that a chapter on scoring methods should be included in the book. Further study of Am-type Designs, however, and of approaches to the use of the test being developed in the U.S.A., made it clear that this would be premature and that until a great deal more is known about Am-type Designs and until workers in the U.S.A. have further clarified the principles of analysis of Patterns which will make possible reliable discrimination between Designed and Simple Slab Patterns, precipitation of results into scoring formulae would be unwise. The chapter on scoring methods is therefore being held over for the present.

APPENDIX A

DIMENSIONS OF THE PIECES

As explained in Chapter One, the original wooden set of pieces was assembled from geometrical pieces already on the market. As these were made by a Czechoslovak firm, the dimensions were measured in centimetres and were as follows:

Squares: 3cm or approximately $1\frac{1}{8}$ in.

Diamonds: 3cm or approximately $1\frac{1}{8}$ in with angles of 45° and 135° , the long axis being 5.3cm or $2\frac{1}{8}$ in.

Half squares: 3cm or $1\frac{1}{8}$ in by 4cm or $1\frac{5}{8}$ in.

Equilateral triangle: 4cm or $1\frac{5}{8}$ in.

Scalene triangle: 4cm or $1\frac{5}{8}$ in by 3.5cm or $1\frac{3}{8}$ in by 2cm or $1\frac{1}{4}$ in.

The thickness of these pieces was .3cm or $\frac{1}{8}$ in.

When these pieces were reproduced in plastic material, the points were slightly rounded to prevent possible wounding with too sharp points, but the sides of the pieces are perpendicular, allowing them to fit more closely together than the wooden pieces whose sides were slightly rounded.

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INSTRUCTIONS UP TO 1951

Up to 1950 it was not realised that special consideration should be given to the best method of administering the test to different types of subjects, and up to this time the basic form of administration of the test was that set out in *The Mosaic Test* (Amer. J. Orthopsychiatry, July 1949, Vol. XIX No. 3) as follows:

'The child is seated before a table on which are placed the open Mosaic Box and the tray, on which is laid a piece of paper. The tester says; "Here is a box of coloured pieces of different shapes, and one can use them like paint to make all kinds of nice things on the tray. Use the pieces in any way you like on the tray. In the box there are (demonstrating each in turn) squares and diamonds with the same length sides. If you were to cut one of the squares in half, you would get this small triangle. Here (pointing to the hypotenuse) is a new length, and here is a triangle whose sides are of this length (demonstrating the equilateral triangle). If you were to cut this triangle in half, you would get this small triangle. Here are, then, in the box, squares and diamonds and three sorts of triangles. Each shape is in six colours".'

Instructions up to 1951

The essentials of these instructions are:

- (a) that the contents of the box should be explained to the child about to use it;
- (b) that the pieces used for this demonstration should be put back into the box so that they will not act as a suggestion to the child as to what pieces to use;
- (c) that the actual wording be varied to suit the age of the child. (It is important to stress, particularly with shy children, that in this test there is no 'good' or 'bad' result, and that it is not an intelligence test).

If the design made by the subject appears to 'represent' or suggest a concrete object, he should be asked if his design is intended to represent anything. In using the test with *adults*, the instructions should again be worded in a manner suitable to their understanding. The word 'pattern' should not be used, lest it suggest that only abstract designs should be made. It is wise to ask the following questions:

'Do you like this design?'

'Are you satisfied with it?'

'Is there anything you would like to alter if you had more time – different pieces – different designs – different conditions?'

The time usually allowed for routine testing is twenty minutes, but in therapeutic use no restriction should be placed on the time taken.

APPENDIX B

THE TRAY

When the change was made from the wooden to the plastic pieces a slight alteration was found to be necessary in the dimensions of the tray to match the more exact fitting together of the pieces, which the vertical sides of the plastic pieces made possible.

The standard tray as described in the instructions is $12\frac{3}{4}$ in x $10\frac{1}{4}$ in (31.5cm x 26cm). These dimensions make possible the construction of successful Edge Patterns with diamonds, half squares and equilateral triangles, if scalenes be used with the equilateral triangles at the ends of the rows. The one piece with which it is not possible to construct an Edge Pattern on a tray of these dimensions is the square.

INSTRUCTIONS SINCE 1951

During the writer's visit to the U.S.A. in 1950, American workers expressed themselves as dissatisfied with several details in the administration of the test; notably with the demonstration to subjects of the inter-relation between the pieces composing the test which, they felt, contained an element of suggestion and would be better omitted. After considerable discussion, therefore, both in the U.S.A. and in Europe, the following modification of the instructions was decided upon and translated into French, German and Spanish and is now issued as an instruction form with each box. The full text of the revised instructions is as follows:

The tester should place the opened box on the table and say: 'Here is a box of coloured pieces of different shapes and sizes. I'll show them to you. There are five different shapes.' (Pick up one of each shape, each of a different colour except white, and lay them in turn on the table, replacing them after each demonstration.) 'Each of these shapes is in six colours in this box: red, blue, yellow, black, green and white also.' (Point out the various colours in the box.)

'Now, I want you to do something with the pieces in this box on this tray' (placing the tray in which a closely fitting piece of paper has been laid, in front of the individual to be tested). 'You may use as few or as many pieces as you like and whatever of the shapes and colours you want. You may make any-

thing you want to and take whatever time* you like. Tell me when you are finished. Would you like me to say this again?"

If the instructions are not understood, they may be repeated in whole or in part. If specific questions regarding procedure are raised which are not covered in the main instructions, the answer should be given that there is complete freedom in the matter. When the design is finished, the tester should discuss with the maker the significance the production has to him, and determine whether the Design is representational, and if so, the object or idea represented, and whether this idea was present or not in his mind when he began. This should be done without the use of leading questions, in a manner appropriate to the individual being tested. A time record should be kept from the moment that instructions are completed until the maker indicates that his Design is finished. Careful note should also be taken of the order in which the pieces are used.

Arrangement of pieces in the box

For each shape the colours are arranged from left to right or from bottom to top as follows: all whites, all greens, all blacks, all yellows, all blues, all reds. There should be eight of each colour of diamonds and isosceles triangles, four of squares, six of equilateral triangles and twelve of scalenes. In the standard box of four hundred and fifty-six pieces, the arrangement of each half of the box should be identical. The small box should be presented with the direction of the pieces as in the standard box.

Size and shape of the tray

The Mosaic Test is used with a standard tray, 12½in by 10½in (31½cm by 26cm), surrounded by a narrow rim. Paper for use with the test should be the exact size of the tray and white in colour.

Supplementary instructions

The instructions given above should be used in all cases in order to assure standard conditions. But in as much as the test is applied to individuals of widely different mental and chronological ages and types of mental organisation, and is used for varied purposes, it is sometimes necessary to create a preparatory atmosphere to the performance of the test, as is often done with objective tests and projective techniques. For example, the relationship between the tester and the individual to be tested might be such that the following introduction would be useful: 'What I am going to show you was designed by someone who is interested in colours and shapes and what people like to do with them. We often show it to people we are working with and see what they

* The sentence in the instructions concerning the time which may be taken to complete the test, should be adjusted to the circumstances in which the test is made. Twenty minutes has been found to be a useful routine period; but in therapeutic use, or with obsessional patients, or with some creative individuals, a much longer time is necessary for them to achieve a completed Design.

think of it.' Or, in the case of hesitant adults: 'There is no right or wrong way of doing this and it is not a test of intelligence.' Care should be taken that any preparation should be such that the efforts put into the Design should arise from the maker's interest in the materials, not from suggestion or coercion by the tester. Likewise the observation of performance and recording of remarks, made during the test, which are often very important for interpretation, should not be done in a manner such as to interfere with the maker's freedom of operation.

Position of the Tray

Another point which arises is the position in which the tray is placed before the subject. Since the tray was made oblong rather than square in order to increase the variety of edge designs which can be made, it is possible to lay it with the long or the short side nearest to the subject, so that he has in front of him either a horizontal or a vertical shape. In practice it has been found that the horizontal position is that more commonly used and is therefore the position in which the tray should be offered to the subject. It is found that individuals who wish to make a vertical Design readily turn the tray to the position they prefer.

Additional information concerning recording

Since publication of these instructions it has been reported that workers whose knowledge of the test has been derived entirely from printed instructions sometimes find it difficult to achieve accurate records of Designs. In order to make the procedure clear the following details are therefore added.

In making the record of a Pattern a beginning should be made with a projecting piece after turning the tray so that this piece comes on the side nearest to oneself. This manoeuvre lessens the risk of disturbing the Pattern by brushing against the rest of the pieces when reaching across them. For example in Plate 57, a convenient point to begin upon would be the yellow diamond at the right bottom of the Pattern. In drawing round this, the piece should be held firmly in place with a finger of the other hand. Three sides of the yellow diamond being recorded the piece can be removed. The fourth side is shared with the black diamond, and will be drawn as the procedure is repeated around the black diamond; and similarly when the green is drawn next. Thus it is never necessary to draw all four sides of each piece when any of the sides of one piece are contiguous with another piece. Taking next the black diamond of the four diamonds; the two free edges of the black diamond can be next traced and the piece removed, leaving two edges which are common to two other diamonds. The green diamond raises a problem as it does not fit exactly to the yellow nor the adjacent yellow to the blue square. The rule for dealing with this frequent problem is to note where essential contacts are made between the pieces— for example the point of the blue square touching the side of the yellow diamond. The free sides of adjacent pieces are then traced and the pieces which are not exactly aligned removed in turn to allow of completion of the adjacent piece. No piece should be removed until its position has been exactly noted. In a Pattern with a number of scattered pieces around

solid blocks of pattern it is essential to outline and remove the scattered pieces first, as there will be less chance of their position being inadvertently altered. At the same time, when a number of pieces of the same colour are fitted closely together, colouring should be so carried out that the shape of the individual pieces composing the mass is retained.

Superimposed Designs

The mode of recording a configuration of superimposed pieces can best be illustrated by an example; let us take for this the six pieces which form the centre of the lower edge of the Pattern in Plate 107; this configuration will be seen to be composed of two white, one red square, two black, one red scalene.

To record this configuration the procedure would be as follows: first steady the group by pressure on the outer and central pieces with the fingers of the left hand, thus fixing the position of the group on the paper; next trace the outline of the whole configuration; this done it will be seen that the white square stands free on three of its sides and this will appear in the outline already made; the white square can therefore safely be slid away; this done the right hand edge of the red square (which is also the left hand edge of the white) is free and can be drawn; as the base of the red square has already appeared in the main outline, the position of this piece has now been safely noted and it can be slid away; the initialled letters for these two pieces should be entered. The outline of the black scalene can now be completed and this piece removed and initialled. As much of the second white square as was visible in the final configuration has already been traced in the main outline; it can therefore safely be slid out and the space initialled leaving the black and red scalenes. As much as is now visible of the black scalene should be outlined and this piece slid out and initialled. The red scalene now alone remains and is holding the same position as it was in the final configuration; its outlining therefore can now be completed and the space initialled; the form of the configuration now appears on the paper and should be checked by replacing the pieces so as to make certain of the accuracy of record of each; in all cases where a superimposed configuration is composed of pieces of a single colour the different pieces can only be distinguished by a careful outlining in the process of colouring; the best way to do this is to leave a tiny white line between the contiguous edges of the pieces.

APPENDIX C

RECORD FORM UP TO 1954

LOWENFELD MOSAIC TEST

Record Form.

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Name. Sex Birthdate

Examined by Date of test

At

Other particulars.

GENERAL

<p>I</p> <p>1. Was the creation of the final design a continuous process ?</p> <p>2. Were other designs attempted first ?</p> <p>3. Did these differ from the final design in:</p> <p>(a) Type ?</p> <p>(b) Form ?</p> <p>(c) Colour ?</p> <p>(d) Position on the tray (see p. 541) ?</p> <p>4. Did they differ from each other in:</p> <p>(a) Type ?</p> <p>(b) Form ?</p> <p>(c) Colour ?</p> <p>(d) Position on tray ?</p>	<p>IV</p> <p>In his attitude to the design:</p> <p>1. Did the maker lay emphasis on</p> <p>(a) Colour ?</p> <p>(b) Form ?</p> <p>(c) Space(s) ?</p> <p>2. Was he</p> <p>(a) Satisfied with the final result ?</p> <p>(b) Dissatisfied ?</p> <p>(c) Actively hostile to his design ?</p> <p>(d) Indifferent ?</p> <p>3. Was his attitude to the test</p> <p>(a) Interested ?</p> <p>(b) Negative ?</p> <p>(c) Grudging, bored or contemptuous ?</p> <p>(d) Suspicious or frightened ?</p>
<p>II</p> <p>Is the final design:</p> <p>1. A single pattern ?</p> <p>2. More than one pattern ?</p> <p>Did the maker regard these as:</p> <p>(a) Separate patterns ?</p> <p>(b) Composing a whole ?</p>	<p>V</p> <p>1. Was a fixed time set for the test ?</p> <p>(a) 20 minutes ?</p> <p>(b) Longer ?</p> <p>2. Did the maker desire more time ?</p> <p>3. Does the tester consider more time would have produced a better result ?</p>
<p>III</p> <p>Is the design placed on the tray:</p> <p>(a) In the centre ?</p> <p>(b) Off centre ? If so, where ?</p> <p>(c) Does it slope right ? Left ?</p> <p>(d) Attached to rim or corner ?</p> <p>If so, describe position</p>	<p>VI</p> <p>Is the final design</p> <p>1. Abstract ? (See p. 544-5. Fig. 2)</p> <p>2. Representational ?</p> <p>3. Conceptual ?</p> <p>4. Combination of any of these ?</p>

Does this report refer to (1) The only/first design of the maker?

(2) One of a series of designs? If so, give the dates on which these were made.

ABSTRACT PATTERNS

VII	<p>Is the result of the test:</p> <ol style="list-style-type: none"> Several patterns ? if so, <ol style="list-style-type: none"> How many ? Are they of the same type ? Are they of different types ? A single pattern ? If so, is it <ol style="list-style-type: none"> Compact ? (See p. 544-5. Fig.2). Spaced ? Intermediate ? 	XII	<p>Is the structure of the completed pattern:</p> <ol style="list-style-type: none"> Simple ? Popular ? Complex ? Ingenious ? Unusual ?
VIII	<p>Is the completed pattern:</p> <ol style="list-style-type: none"> One fundamental pattern ? (See p. 540. Fig. 1). Several fundamental patterns ? <ol style="list-style-type: none"> Without elaboration ? With elaboration ? Which fundamental patterns appear ? 	XIII	<p>Is the whole tray covered ? If so,</p> <ol style="list-style-type: none"> By a compact pattern ? By a spaced or intermediate pattern ? By an incoherent mass of pieces ? By an incoherent mass with islands of design ?
IX	<p>Is the overall shape of the single pattern:</p> <ol style="list-style-type: none"> Circular ? Square or oblong ? Oval or diamond shaped ? Linear or arrow ? Star-shaped ? Cross (vertical or diagonal) ? Whirling ? Winged ? Hollow-centred ? Irregular ? Layered ? In relation to the rim of the tray <ol style="list-style-type: none"> Pendant ? Growing ? Repetitive ? Any other shape ? Describe 	XIV	<p>Is the pattern a frame ? (See p. 548).</p> <ol style="list-style-type: none"> Following the edge of the tray ? If not, describe form Is the centre empty ? Does the frame contain a separate pattern ? ('item' see p. 548).
X	<p>If a single pattern, does it show:</p> <ol style="list-style-type: none"> Symmetry, in form ? In colour ? Asymmetry, in form ? In colour ? "Super-symmetry" ? No recognisable "Gestalt" ? An effect of perspective ? 	XV	<p>If the final form is a 'slab' (see p. 547. Fig. 5c)</p> <ol style="list-style-type: none"> Was the absence of "Gestalt" <ol style="list-style-type: none"> Intentional ? The end of a random process ? Is this result due to <ol style="list-style-type: none"> A predominant interest in colour ? A dislike of geometrical pattern ?
XI	<p>Is the pattern:</p> <ol style="list-style-type: none"> Successful ? (See p. 546). Unsuccessful ? 	XVI	<p>Is any part of the design incoherent in structure ? (See p. 547).</p> <p>If so, where ?</p>
		XVII	<p>Did the completed design suggest to the tester a representational content, not perceived by the maker ?</p> <p>If so, what ?</p>

XVIII Is the pattern 1. In one colour ? If so, which 2. In several colours ? If so, which ?..... 3. Do the colours (a) Reinforce the geometrical structure ? (b) Form patterns additional to the geometrical structure ? (c) Form bold contrasts ? (d) Appear to be used indiscriminately ?	XX Does Red appear in the pattern ? 1. As the centre ? 2. As a cross ? 3. As a serrated edge ?
XIX Does Black appear in the pattern ? 1. As the centre ? 2. As a cross ? 3. On the periphery ?	XXI Does White appear in the pattern ? 1. As the centre ? 2. As a cross ? 3. On the edge ?
	XXII Does any other colour figure conspicuously in the pattern ? If so, describe.....

REPRESENTATIONAL AND CONCEPTUAL DESIGNS.

XXIII 1. What did the maker intend the design to represent ? 2. Did he embody this in a title ? (a) Before starting ? (b) During the making of the design ? (c) After completion ? (d) Spontaneously ? (e) In answer to question ? (Give title) 3. Is it recognisable in the design ? •	XXV Is the design 1. Successful ? 2. Unsuccessful ? 3. Partially successful ? 4. Simple ? 5. Clever ? 6. Bizarre ? (See p. 548. Fig 3). (a) In content ? (b) In execution ?
XXIV Does the design represent action ? Describe	XXVI Is the design 1. In one colour ? If so, which ?..... 2. In several colours ? If so, which ?..... 3. Are the colours intended to be (a) Naturalistic ? (b) Non-naturalistic ? (c) Indiscriminate ?

FOR ALL TYPES OF DESIGN.

XXVII Is the design made 1. Wholly with one shape ? 2. With several different shapes ? (Give numbers of shapes used) (a) Squares (b) Diamonds (c) Isosceles triangles (d) Equilateral triangles (e) Scalene triangles Total	XXIX Did the maker attempt to stand any of the pieces on edge ? Describe.....
XXVIII Are any pieces superimposed ? N ^o	XXX Does the design call for further comment ?

NOTES AND DEFINITIONS

1. The page numbers refer to the 'Mosaic Test': Margaret Lowenfeld: 'The American Journal of Orthopsychiatry', Vol. XIX, No. 3, July 1949, p. 537-550.

2. **Design** is used as a general term to describe the total, final product of the test and also for representational and conceptual mosaics.

Pattern is used exclusively for abstract mosaics.

3. (Referring to Question VIII).

An elaborated fundamental pattern describes small patterns which consist of a fundamental pattern to which under ten additional pieces have been added.

4. (Referring to Question IX).

i **Circular** describes all patterns having the overall form of a disc.

ii **Square or oblong** describes all patterns which are approximately rectangular.

iii **Oval** describes all patterns whose overall shape varies from diamond-shape to true oval.

iv **Linear or Arrow** describes long and narrow patterns.

v **Star-shaped** describes patterns whose overall shape resembles the fundamental pattern formed by green diamonds in Fig. 1, p. 540.

vi **Whirling** describes patterns whose overall form suggests circular movement.

vii **Winged** describes patterns which consist of two parts, in form mirror images of each other, separated by a strip different in character from the sides.

viii **Hollow-centred** describes all patterns with a central space.

ix **Irregular** describes patterns whose overall general form, while not necessarily asymmetrical, does not fall into any ordinary geometrical shape.

x **Cross** describes designs whose total pattern forms a cross. It can also be used for patterns in which, for example, a differentiated cross appears within another shape.

xi **Layered** describes a pattern in which a complete secondary design is constructed on top of another, partially or wholly hiding it.

xii (a) **Pendant** describes patterns which hang downwards from the upper rim of the tray.

(b) **Growing** describes patterns, whether attached to the rim of the tray or not, in which the base of the pattern is the widest measurement.

xiii **Repetitive** describes patterns in which a single motif is constantly repeated (in the manner of a wallpaper).

(Referring to question X).

'Supersymmetry' describes patterns showing 'formalistic symmetry often amounting to stereotypy'. (Wertham and Golden, Am. J. Psychiatry. Vol. XCVIII, 1941).

(Referring to Question XI.)

Paragraph 1, p. 546 should be completed as follows:

'or, while perceiving that the design is unsuccessful, is unable to correct it'

(Referring to Question XII).

i **Simple**. This term describes patterns in which the simplest possible use is made of the pieces, including fundamental patterns and other patterns of a very simple nature.

ii **Popular**. In any large collection of Mosaics certain similar patterns will be found constantly to recur with small variations, the centre of many being formed by a fundamental pattern. This group corresponds to the 'banal' response of the Rorschach Test.

iii **Complex** describes patterns in which the design, while not 'popular' cannot be called 'ingenious'.

iv **Ingenious** describes patterns which show conspicuous originality in the inter-relation of the pieces.

v **Unusual**. Certain patterns will be found, particularly among psychotics, which are neither complex nor ingenious, but are unusual in form.

(Referring to Question XXV).

5. **Clever** describes designs in which skilful use has been made of the pieces to represent external objects.

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APPENDIX D

MODIFICATIONS OF STANDARD TECHNIQUES IN THE USE OF THE LOWENFELD MOSAIC TEST IN THE STUDY OF NON-WESTERN PEOPLES

Since the constituent parts of the L.M.T. have been made up of materials familiar to Western peoples, certain assumptions in regard to them will be implicit in all Western users. It is unlikely that any of these would be spontaneously present in non-Western peoples, except through their contact with the West.

In order, therefore, to make sure that the response of the non-Western subject will be spontaneous, certain modifications in technique are essential.

Analysis of the development of responses made by Western children to the L.M.T. (i.e. subjects who, because of their youth, cannot already have had experience of this type of material) has shown that there is a regular series of developmental stages which occurs in practically all collections. In the present state of our knowledge of the test it is impossible in these responses to distinguish that part of the response which arises from immaturity in itself and that which is caused by unfamiliarity with the material.

In non-Western peoples it is clear that the materials composing the test will be unfamiliar. In some studies, i.e. of children, the immaturity factor will also be present. Before the significance of responses made by non-Western peoples can be adequately assessed some attempt must be made to separate these factors from one another. These notes are designed to assist in such discrimination.

SUGGESTED MODIFICATIONS IN TECHNIQUE OF ADMINISTRATION

(1) In the standard mode of administration for Western people instructions concerning the pieces are given by the investigator before the subject has any opportunity to handle the pieces, thus precluding the appearance of Stages 1 to 3, described in Chapter Five (in which the child merely investigates the pieces). Only the individual judgment of the anthropologist at work can therefore decide with each individual piece of investigation whether or not it is desirable merely to *present* the box and tray without saying anything about them at first, in order to give the subject the opportunity of taking out the pieces,

examining, biting them, etc, in order to ascertain of what material they are composed.

(2) It is probably unwise to use the double box with non-Western subjects, as this amount of material can be rather overwhelming and, at any rate at first, it may be wiser to use the single box. It is also suggested that, instead of replacing in the box pieces used in explaining the test, these might be laid in the lid so as to serve as examples of the shapes to be found in the different racks.

(3) Experience has shown that there is a very definite semantic difficulty in being sure that the words used in the definition of the goal 'make something' will really convey to the subject that an entirely spontaneous result is desired which need not conform to any standard of excellence. It is suggested, therefore, that a pilot trial be made using different words, and that the completed designs be presented to fresh persons of the same group, with an enquiry as to what word they would use to describe it.

(4) Owing to the point raised under (1) it seems probable that the practice factor will be more important with non-Western than with Western peoples. The writer feels great care should be used in drawing deductions from single samples of designs from any culture hitherto unstudied in this way.

(5) In work with new groups, careful note of the *method* by which the result is arrived at is even more important than with Western peoples, as, owing to the inherent geometric relations of the pieces, juxtaposition can arise by chance which, looked at from the point of view of the completed design, appear to have a coherence which is quite illusory, and this should be carefully checked.

SUGGESTIONS CONCERNING THE 'GENERAL PLAN OF WORK

(i) that a pilot trial be made of the response of selected subjects, and carbon copies made of the designs by placing two sheets of paper on the tray with writing, or 'pen' carbon paper between the two: the carbon copy can be on thinner paper. The Institute of Child Psychology will be interested to see carbon copies of such designs.

(ii) That trouble be taken to ascertain what the subjects think about the colours of the mosaic pieces: do they like them? would they prefer other colours? etc, and that careful note be taken concerning the prevalent colours of vegetation, houses, dress etc.

(iii) That in the country under study, at the beginning of any cultural study and until the general plan of response is known, the test should be repeated with key members of the pilot group with a sufficient interval between administrations to eliminate the factor of visual memory.

(iv) When a certain number of designs has been collected, valuable information as to the extent to which these can be considered typical for the culture can be gained through presentation of a selection to suitable members of the culture for discussion as to preference and criticism.

APPENDIX E

COMPOSITION OF THE SETS OF MOSAIC PIECES USED BY OTHER WORKERS

Wertham and Golden

In 1941 Dr Frederic Wertham published an account of a modification of the L.M.T. that he had devised, and with which a considerable amount of work, notably in the study of psychotic patients, has been carried out by Dr Wertham and his co-workers. The composition of Dr Wertham's set was as follows:

The same five shapes in the same numbers with the addition of twelve 'oblong pieces' in each of the same six colours.

The dimensions mentioned by Dr Wertham are as follows:

Square: with sides of $1\frac{1}{4}$ in

Diamond: with sides of $1\frac{1}{4}$ in

Triangle: base $1\frac{1}{2}$ in; sides $1\frac{1}{4}$ in

Triangle: $\frac{3}{4}$ in by $1\frac{1}{4}$ in by $1\frac{1}{4}$ in

Diamond and Schmale

In 1944 Drs Diamond and Schmale constructed a different set upon rather different principles. This set consisted of five shapes arranged as follows:

Square: with sides of 1in

Diamond: 1in by $1\frac{1}{4}$ in

Right-angled triangle: equal to half square

Equilateral triangle: with sides of 1in

Rectangle: $1\frac{1}{4}$ in by $\frac{3}{4}$ in substituted for the scalene triangle in the L.M.T.

Ten of each of these shapes was presented in each of the same six colours.

It will be noted that the differences between these sets and that of the L.M.T. are as follows:

Wertham

At with the L.M.T. the square and the diamond have sides of equal length (this being very slightly less than the length of the L.M.T. pieces). The first triangle, like that of the L.M.T. has two sides of this same length, i.e. it is half the square, though this is not specifically stated. The equilateral triangle does not share a length with any of the pieces except one side of the scalene. Unlike the L.M.T., there is no inter-relationship between the equilateral triangle,

Composition of the Sets of Mosaic Pieces used by Other Workers

the scalene and the half-square. The added piece shares one length with the equilateral triangle. It is difficult to see the reason for the addition of this piece. Diamond and Schmale

Here the square, the equilateral triangle, one dimension of the diamond and two sides of the half square are the same length, viz: 1 in. The substituted rectangle has one side half the length of the square. No use has been made of the new dimension – the diagonal of the square – which in the L.M.T. forms the basis of the equilateral and scalene triangles.

APPENDIX F

STAGES IN THE DEVELOPMENT OF TEACHING

Up to the outbreak of the 1939-45 war, research on the L.M.T. and the development of teaching was carried on at the I.C.P., by Dr Madeline Kerr, and privately by Dr Lowenfeld and co-workers.

During the war the only work which could be undertaken was connected with the war effort and certain pieces of research were carried out by pupils of Dr Kerr and by certain officers of the armed forces who had become interested in the test, and by Drs Eysenck and Himmelweit. The fields in which such pieces of work were undertaken were the study of neurotic soldiers, of soldiers with certain physical complaints, and personnel selection in a light engineering industry.

At the end of the war it was found that work had been going on in a number of countries in various fields, and in July 1948 a conference was organised at the I.C.P. attended by psychiatrists and psychologists from eleven countries. Collections of mosaic designs were exhibited from Switzerland, Sweden, France and Belgium. It was at this conference that the similarities between the responses of children, mental defectives and certain types of schizophrenic patients was first observed. At this conference it also became evident that the collections of designs from quite different European countries (and often also from different milieux) exhibited remarkable similarities, making possible the conception of a basic plan of response which would be valid in the countries so far studied.

Since 1948 close contact has been maintained between many of the members of the conference and the I.C.P.

Arising out of this conference came the visit of Dr Lowenfeld to the U.S.A. and a 'workshop' was held in Washington at the Catholic University of America in June, 1950. At this conference Dr McCullough of Letchworth, Dr Bates Ames of the Gesell Institute and several other workers demonstrated designs from different groups collected in the U.S.A.

Since 1950 Dr Ursula Stewart and Dr Leland have carried out some comparative studies of American and European reactions. Courses of training in the use of the L.M.T. are held from time to time at the I.C.P., at each of which an endeavour is made to incorporate the current knowledge and understanding of the test.

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INDEX

Abel, Dr Theodora, 327

Abstract Patterns

- in the development of children, 121
- new classes of in seven year old children, 124
- new classes of in eight year old children, 128
- new classes of in nine year old children, 129
- in children and mental defectives compared, 139-144
- as to form, 139-143
- as to colour, 143-144
- particular examples of considered normal in European collections, 151

In the study of normal personality, 160-186

- significance of errors in, 214
- forms of, associated with neurosis, 218-24
- frequency of, in schizophrenic responses, 257

Abstract Patterns with Recurring Form (Eu-type)

- definition of, 68
- definition of Recurring Form, 69
- symmetry in majority of, 69
- recurrence of definite forms in, 69
- Eu-type Patterns, 69

Successful, classification of, 70-84

- Group one, 71
- Group two, 77
- Group three, 80
- Group four, 83

principles of classification of, 71

- general characteristics of, 85-91;
- skill, 85; planning, 85; use of space, 86; use of colour, 87; movement, 89; expression of emotion, 90; supersymmetry, 91

Abstract Patterns without Recurring Form (Am-type)

Am-type Patterns, 69

definition of Am-type, 93

description of, 94-103

- Multiform, 94; Composite, 96;
- Diffuse, 98; Collective, 98; Designed Slab, 99; Simple Slab, 101;
- certain characteristics of (colour), 101;

Administration of the test, 39-40

Instructions, 40

- Instructions, revision of, 40
- total response, emphasis on, 40

Administration, standard, modifications of, 41-44

- in the study of children, 41
- in the study of normal adults, 42
- in the study of neurosis, 42
- in the study of mental diseases, 43
- in use in industry, 43
- in anthropological studies, 44
- in the study of sub-normal intelligence, 137
- in the study of non-Western peoples, 343

Am-type Patterns (see Abstract Patterns without Recurring Form)

definition of, 93;

description of, 94-103

- Multiform, 94; Composite, 96;
- Diffuse, 98; Collective, 98; Designed Slab, 99; Simple Slab, 101;
- certain characteristics of (colour), 101

frequency of Representational Designs in, 187

striking difference between Eu-type and, 221

number of very small Simple Patterns in, and difficulty of assessing, 227

Three Multiform Am-type compared with a Eu-type Pattern, 283-93

radical difference between them, 283

geometrical relations, 284

importance of area of tray in, 285, 287

particular use of the pieces, 288

attitude of subjects compared, 288-9

fundamental differences noted, 290-1

space and repetition in, 293

Composite Patterns compared with Eu-type, 293-6

Objective Experimental Pattern considered, 295

concept of space, 295

Diffuse Pattern considered, 296-7

Designed Slab Patterns, 297-302

American attitude, 297

antithesis between Eu-type and, 298
 comparison of different aspects in Eu-type and, 298-302
 significance of differences discussed, 302-14
Amentia, Primary, 221
 Ames, Dr Bates, 141 f, 347
Anthropoid Patterns, 187
 definition of and association with neurosis, 223-4
Anthropology, use of L.M.T. in study of, 44
 modifications of standard administration in, 44
 knowledge of whole range of known responses essential in, 47
Asymmetrical Patterns, discussion of, 91
Autistic Circle, description of, 272-3
 Binet-Simon test, 106
 Binswanger, Ludwig, 253, 254
 Bowlby, 146
Card-House Patterns, definition of, 131
Centralised Patterns
 with major errors classed as Slabs, 216
 significance of growth from Edge and Frame to, in psychotherapy, 219
 specialised forms of, associated with neurosis, 222-4
Cerebral arteriosclerosis, use of L.M.T. in diagnosis of, 242
Cerebral atrophy, use of L.M.T. in diagnosis of, 242-3
Cerebral stroke with aphasia, use of L.M.T. in diagnosis of, 243
Children
 modification of standard administration in study of, 41
 frequency of Fundamental Patterns in, 72
 use of colour by, 88
 significance of Slab Patterns in development of, 99
Use of the L.M.T. in the study of, 105-135
 two angles of approach to study of designs made by, 105
 common characteristics in responses of schizophrenic patients,
 • mental defectives and, 106
 General study of development in, as reflected in the L.M.T., 107-132
 developmental Stages:
 Stages 1 and 2, 110
 Stages 3, 4, and 5, 111
 Stage 6, 115
 Stage 7, 116
 Stage 8, 118

Stage 9, 120
 Stage 10, 121
 (see *Table I* pages 108-9)*
 Development at:
 6 to 7 years, 122-4
 8 years, 128
 9 years, 129
 10 years, 129-30
 11 years, 130
 12 years, 130-1
 13 years, 131-2
 14 years, 132
 (see *Table II* pages 126-7)
 reactions stimulated by the test in, 107
 emergence of different lines of development in, 111
 necessity for understanding process of development in, 115
 appearance of Prefundamental Patterns in development of, 117
 appearance of Slabs and Edge Patterns in development of, 118
 appearance of Fundamental Patterns in development of, 119
 awareness of the tray in, 120
Abstract Patterns in development of, 121
Representational Designs in development of, 121
Elaborated Fundamental Patterns in development of, 122-3
 infrequency of Representational Designs in seven year old, 125
 persistence of Kite Reaction in seven year old, 128
 awareness of whole area of tray in, 131
 appearance of sophisticated use of colour in, 132
 Individual studies of development in three boys, 132-35
Comparison of development in normal children and in sub-normal intelligence, 139-148
 growth of patterns from edge to centre during psychotherapy, 219
 Frame and Item normal manifestation in development of, 219
 Winged Patterns associated with adolescence in normal, 222
Circular movement
 description of, 89
 appearance of in eleven year old particular examples of, 182, 228
 children, 130
Circular Patterns (see Eu-type 70-84)
 description of, 72
Classification of Designs, general principles of, 47-50
 differing significances of, 48
 in normal subjects, 160

- increases perception and understanding of the tester, 160
- Clever Designs**, description of, 63
(see also: *skill in Representational Designs 61-64*)
- Coarctation**, 227, 230, 249, 250, 251
- Collective Patterns**, 121, 123, 125
description of, 83-84
in subjects of sub-normal intelligence, 141-2
example of by English boy of six, 224-5
- Compact Patterns**, 44, 48
description of, 81
new classes of in ten year old children, 129
conventionality of in eleven year old children, 130
in sub-normal intelligence, 142
- Competent Designs**, description of, 62
(see also: *skill in Representational Designs 61-64*)
- Complex Patterns**, description of, 85
intrinsically neurotic examples, 227-8
- Components of the test, 38-39**
The box, size of, 37
The box, contents of, 38
The tray, standard design of, 38, 335
The paper, 39
- Composite Patterns**, description of, 96-98
example of neurotic Eu-type, 217
consideration of parallels between Eu- and Am-type, 217
comparison of Eu- and Am-type, 293-6
- Composition of the test, 32-37**
Principles of selection of:
 shapes, 32
 colours, 33
 size and thickness of the pieces, 34
 number of pieces, 34
 material of the pieces, 36
 arrangement of the colours, 37
- Conceptual Designs**, description and types of, 64-5
 planning in, 65-7
 relation to the tray in, 159-60
 detailed study of in Normal Personality, 190-3
 symbolology and sense of design in, 192
 differing significance of errors in Representational Design, Abstract Patterns and, 214
 presence of neurosis in, related to content only, 226-7
- Corner Patterns** (see *Eu-type 70-84*), description of, 80
 absence of in sub-normal intelligence, 144
- connection between neurosis and, 218, 220
 feelings of devaluation and inadequacy, 220
- Cruciform Patterns** (see *Eu-type 70-84*), description of, 76
 in thirteen year old children, 131
 association with neurosis, 222-3
 a symbol of balance, 223
- Cultural Problems**, use of the L.M.T. in the study of, 282-325
 detailed analysis of American and European Patterns, 282-302
- Am-type Multiform Non-Recurring Patterns compared with Eu-type, 283-93**
 radical difference noted, 283
 geometrical relations in, 284
 use of pieces and area of tray compared, 285-8
 attitudes of subjects compared, 288-9
 fundamental differences discussed, 290
 three Eu-type Multiform Patterns considered, 291-3
 space and repetition in Am- and Eu-type Patterns, 293
- Composite Patterns** (Am- and Eu-type) compared, 293-6
- Diffuse Pattern** considered, 296-7
- Am-type Designed Slabs** considered, 297-302
 profound difference in American attitude, 297-8
 absence of repetition, 298
 Am-type concept of pattern antithetical to Eu-type, 298
 comparison of different aspects of Am-type Designed Slabs and Eu-type Patterns;
 attitude of the subject to the pieces, 298-9
 geometric relation of the pieces, repetition, outward form, 299-300
 movement, 300-2
 colour, three dimensional use of the pieces, 302
- Significance of differences discussed, 302-14**
 figure/ground relationship, 304
 attitudes to Defined Interior Space compared, 306
 attitudes to outside world compared, 309-11
 Brief report on Jamaican Designs, 314-7
 Discussion of a Manus Pattern, 317
 Dellaert, Dr, 239
 Delusional Dissociated Reaction, description of, 58

- distinction between Kite Reaction and, 59 •
- clinical patients and the, 269-72
- Depression
 - characteristics of responses of patients suffering from, 248
 - relation of the use of black to, 229
- Design, definition of, 50**
 - influence of cultural conceptions upon, 49
 - influence of subject's opinion of, 49
 - correspondence between mental age and, 145
 - importance of *mode* of production of, in sub-normal intelligence, 146
 - as a spontaneous creation, 154
 - imaginative content of -humorous
 - romantic - decorative, 224
- Design, neurotic, definition of, 150
- Design, normal
 - difficulty in defining, 150
 - diagnostic significance of, 150
 - cultural connotations of, 150
 - for European subjects, examples of, 150-1
 - Am-type considered, 296-7
- Diffuse Patterns, 48, 221, 296-7
- Disordered Patterns, neurosis and, 221
- Drawing Materials Reaction, 107, 116, 121
- Edge Patterns (*see Eu-type 70-84*)
 - relation of to size of tray, 39
 - description of, 77
 - appearance of, in Stage 7 in development in children, 118
 - absence of in sub-normal intelligence, 144
 - connection between neurosis and, 218
 - significance of growth from Edge and Frame to Centralised in psychotherapy, 219
- Elaborated Fundamental Patterns
 - description of - development in children, 122
 - in subjects of sub-normal intelligence, 142
- Elementary Designs (*see also: skill in Representational Designs 61-64*)
 - description of, 61
- Elementary Patterns, description of, 85
- Ellenberger, Henri, 28, 43, 58, 59, 69, 110, 111, 150, 214, Chapter Nine, 240-281, 329, 330
- Embroidery and the L.M.T., 18, 31, 32, 33, 326
- Epilepsy, 147 •
 - use of the L.M.T. in diagnosis of, 247-8
 - representation of subjective experience of, 247
- Erikson, Erik, 305 and f, 306
- Eu-type Patterns (*see Abstract Patterns with Recurring Form*), 69**
 - definition of, 68 •
 - definition of Recurring Form, 69
 - symmetry in majority of, 69
 - recurrence of definite forms in, 69
 - classification of, 70-84**
 - principles of classification, 71
 - general characteristics of, 85-91**
 - skill, 85; planning, 85; use of space, 86; use of colour, 87; movement, 89; expression of emotion, 90; supersymmetry, 91; striking difference between Am-type and, 221
- Eu-type Patterns compared with Am-type Patterns, 283-93**
 - radical difference between them, 283
 - geometrical relations in, 284
 - use of colour in relation to form, 285
 - relation to tray, 285-7
 - use of the pieces, 288
 - attitudes of subjects compared, 288-9
 - space and repetition in, 293
 - Composite Patterns Am- and Eu-type compared, 293-6
 - comparison of different aspects of Am- and Eu-type Designs, 298-302
 - significance of differences discussed, 302-14
- Eysenck, 22, 347
- Family, study of designs made by different members of, 326
- Fox Reaction
 - description of, 52
 - absence of in designs of normal adults, 52
 - Vivid Designs and, 63
- Frame Patterns (*see Eu-type 70-84*)
 - description of, 77-80
 - Frame and Item, 78
 - absence of in sub-normal intelligence 144
 - example of by neurotic subject, 209
 - connection between neurosis and, 218
 - significance of growth from Edge and Frame to Centralised in psychotherapy, 219
 - discussion of neurosis and, 218-20
- Fundamental Patterns
 - relation to number of pieces, 35
 - discussion of, 71
 - resulting from boredom, 71
 - appearance of in Stages of development in children, 119
 - in subjects of sub-normal intelligence, 141
- Gesell tests, 106
- Gesell Institute, 328
- Golden, Lili, 257
- Great Britain

- relative frequency of types of Pattern in, 69-70
- recent occurrence of Am-type Patterns in, 91
- examples of Am-type Patterns made by subjects from, 95-96
- Growing Patterns (*see Eu-type 70-84*)
 - description of, 75-6
 - appearance of in eleven year old children, 130
- Handed or Diagonal Patterns (*see Eu-type 70-84*)
 - description of, 77
- Harding, Dr Gösta, 211 f
- Histology, 45
- Histological patterns, analogy with mosaic patterns, 45
- Horn-Hellersberg Test, 153
- Incoherent Patterns
 - description of, 102-3
 - in neurosis and amentia, 221
- Industry,
 - use of L.M.T. in, 43
 - modification of standard administration in, 43, 329
- Ingenious Patterns
 - description of, 85, 155
- Institute of Child Psychology, 17, 29, 46, 331, 344
- Instructions**
 - publication of, 40
 - revision of, 40
 - modification of in the study of children, 41
 - in the study of neurosis, 42
 - in the study of sub-normal intelligence, 137
 - influence of primary responses to, 154-5
 - misinterpretation of in neurotic subjects, 208-11
 - up to 1951, 333-4
 - since 1951, 335-8
 - modifications of in study of non-Western peoples, 343-4
- Intelligence**
 - the L.M.T. and the factor of, 137-9
- Intermediate Patterns**
 - description of, 83
 - appearance of in seven year old children, 125
 - in ten year old children, 129
 - greater organisation of in eleven year old children, 130
 - in sub-normal intelligence, 142
 - analysis and interpretation of, 174-5, 176-7
- Irregular Patterns (*see Eu-type 70-84*)
 - description of, 76
- Jamaican Designs, brief report on, 314-7
- Kerr, M., 17, 26, 314, 315, 316, 317, 326, 327, 328, 347
- paper on Validity of Lowenfeld Mosaic test, 42
- collection of, Fundamental Patterns in Jamaica by, 72
- Jamaican Patterns collected by, 84, 114, 128
- Kouwer, B. J., 89
- Koch, Karl, 255
- Kohler, Dr Claude, 215 f
- Korsakoff's syndrome, use of L.M.T. in diagnosis of, 244
- Kite Reaction
 - description of, 51
 - absence of in designs of normal adults, 52
 - distinction between Delusional Dissociated Reaction and, 59, 113
- Drawing Materials Reaction and, 116
- Drawing Materials Reaction and, in Stage 10, development of children, 121
- appearance of in Stage 10, 124
- persistence of in seven year old children, 128, 139
- in sub-normal intelligence, 144
- Landes, Dr Ruth, 303, 306
- Langer, Susanne, 26
- Leland, Dr, 102, 347
- Levin, Dr Monroe, 329
- Linear or Arrow-shaped Patterns
 - discussion of, 74
- Lowenfeld Mosaic Test**
 - as a study of personality, 16
 - as a language, 23, 152
 - origin of, 31-2
 - factors involved in performance of, 48
 - manipulative aspect of, 49
 - its use as an instrument of exploration, 49, 115
 - and the factor of intelligence, 137-9
 - correspondence between Design and mental age in responses to, 145
 - factors in interpretation of responses to, 151
 - a miniature reality situation, 153
 - general spontaneity in responses to, 192
 - creative responses to, 193
- Classification of deductions in respect of Normal Personality and, 195-8**
 - use of in study of specialised problems, 198-207
 - vocational guidance and, 204
 - neurotic responses to, 213
 - vivid representation of subjective state achieved by, 225
 - distortion in drawing and similar results in, 226

- caution needed in interpretation of colour in, 232
- Relation of to psychotherapy, 232-7**
- organic brain disease—diagnosis of and the, 241
- Schizophrenia and, 257-66**
- certain clinical groups and responses to, 266-81**
- use of compared with biological method, 286
- psychological medicine and, 326
- use of in sociological study, 326-7
- in the study of twins, 327
- modifications of technique in study of Non-Europeans, 327
- co-ordinating centre needed, 331
- scoring methods, 332
- McCulloch, T. L., 137, 145
- Manic-depressives**
- significance of L.M.T. responses in, 253
- changes that take place in responses of, 254-5
- Manus Design, discussion of, 317-24**
- Maturation**
- rate and type of in children, 115
- factor of in sub-normal subjects, 145
- factor of, affecting character of responses in sub-normal intelligence, 146
- Mead, Margaret, 17, 26, 45 f, 303, 304, 305 f, 314, 316 f, 317, 327
- Mental defectives**
- common characteristics in responses of schizophrenic patients, children and, 106
- Drawing Materials Reaction and Representational Designs in, 116
- factors to be considered in study of responses of, 136
- problem of diagnosis in certain, 146
- Mental disorders**
- use of the L.M.T. in the study of, 240-281
- Organic diseases of the brain, 240-8**
- use of L.M.T. in diagnosis of:
- cerebral arteriosclerosis, 242
 - cerebral atrophy, 242-3
 - cerebral stroke with aphasia, 243
 - traumatic brain damage, 243-4
 - Korsakoff's syndrome, 244
 - general paresis, 244-5
 - post-encephalitic syndromes, 246-7
 - epilepsy, 247-8
- advantages of several successive responses in study of, 247-8
- mental diseases, 248-57**
- use of L.M.T. in diagnosis of:
- depressive states, 248-51
 - reactive depression, 249
 - mild depression, 249-50
 - symptomatic depression, 250
 - severe chronic melancholia, 250-1
 - manic states, 251-4
 - manic-depressive psychosis, 254-5
 - schizophrenia, 255-7
- correlation between responses and certain clinical groups, 266-81**
- Story Reaction, 267-9**
- Delusional Dissociated Reaction, 269-72**
- Artistic Designs, 273-7**
- comment, 277-81
- schizoid individuals, 279
- psychopaths, 280
- Multiform Patterns, 48**
- description of, 94
- summary of attributes of, 96
- Am-type Multiform compared with a Eu-type Pattern, 283-93
- rarity of in Europe, 291
- three Eu-type Multiform Patterns considered, 291-3
- Neurosis**
- use of L.M.T. in study of, 42
- modification of standard administration in, 42
- Incoherent Patterns indicative of, 103**
- Single Patterns and the factor of, 142**
- problem of in sub-normal intelligence, 146
- designs reveal characteristics of, 151
- attitude to the design and, 155
- The use of L.M.T. in the study of, 208-39**
- responses to the test indicative of, 208-18
- misinterpretation of the instructions, 208-11
- disturbance of the normal relation to the pieces (loss of control), 211-3
- failure to perceive commission of errors, 213-4
- types of error, 214-8
- inability to correct major errors (obsessional personality), 214-5
- influence of types of error on diagnosis, 214
- Unsuccessful Abstract Patterns: Compact, 214-7**
- Unsuccessful Representational Designs, 217**
- Abstract Patterns whose form is associated with, 218-24**
- Patterns with a relation to the edge of the tray, 218**
- Frame Patterns, 219
 - Corner Patterns, 220
 - Pendant Patterns, 220-1
- Patterns with a relation to the whole area of the tray, 221-4**

- Scattered and Incoherent - Disordered, 221
- Specialised forms of Centralised Patterns, 222-3
- Winged, 222; Cruciform, 222-3
- Anthropoid, 223
- Colour in relation to (*passim*), 221
- Intrinsic neurotic qualities in Representational Designs, 224-7**
- neurotic content, 224-6
- lack of cohesion - incomprehensibility - distortion - Conceptual Designs, 226
- Intrinsic neurotic qualities in Abstract Patterns, 227-8**
- very small Simple Patterns, Small Complex Patterns not placed centrally in the tray, 227-8
- Hollow Centre, 228
- Relation of colour to neurosis, 228-32**
- Black, 229; Black and white, 230; Red, 230; White, 231; Yellow, 231; Blue and green, 231; combinations of colours, 232;
- Other modes of approach to the study of neurosis, 237**
- the time factor, subject's remarks, 237
- handling of and emotional relation to the pieces, 238
- Normal adults, goals of investigation of, 42
- modification of standard administration in study of, 42
- Normal Personality:**
- use of L.M.T. in the study of, 149-207
- general considerations of, 149-152
- definition of, 152
- analysis of attitude of normal subject, 153-156**
- approaches to the test material: (a) administrative, (b) intuitive, (c) impulsive, (d) deliberative, 154; (e) experimental, (f) spatial, 155;
- attitude to the design, 155-6
- General study of designs in, 156-60**
- visual qualities, perceptual and manipulative qualities, 157;
- Unsuccessful Patterns in: accidental error, 157; involuntary error, essential error, 158; the Design considered as a whole, initial impression, cultural influence on, 158-9
- relation of the Design to the tray, 159-60
- classification of Designs, 160
- Detailed study of Abstract Patterns in, 160-186**
- Intermediate, 174-5
- spaced, 175
- Summary, 175-7
- Significance of the standard categories in, 177-81
- Square or Oblong, 178
- Linear, Star-shaped, Circular, 179
- Oval, Triangular, Growing, 180
- Repetitive, 181
- particular characteristics, 181-3
- Internal space, movement, 181
- Three-dimensional features, 182
- Anthropoid Patterns, 183
- Abstract Patterns related to this whole area of the tray, 183-6
- Detailed study of Representational Designs in, 187-90**
- Detailed study of Conceptual Designs in, 190-3**
- Analysis of a design as a self portrait, 193-5
- Classification of deductions in respect of L.M.T. and, 195-8**
- Use of the L.M.T. in the study of specialised problems, 198-207
- personal stability, 198-204
- adaptation to professional work, 294-6
- study of the family, 206-7
- Objective description, importance of technique of, 44
- Objective Experimental Patterns
- description of, 84
- inclusion of in Abstract Patterns with Recurring Form, 97
- Example of Am-type considered, 295
- Oval or Diamond-shaped Patterns, discussion of, 74
- 'Pairs' response, 119
- in sub-normal intelligence, 140.
- Paresis, general, use of L.M.T. in diagnosis of, 244-5
- Pattern
- definition of, 50
- definitions of forms of, 342
- Patterns, relation to tray:**
- in sub-normal intelligence, covering tray or making use of whole area, rarity of, 143
- relation to edge, absence of in sub-normal intelligence, 144
- significance of errors in Patterns related to whole area of tray, 214-6
- connection between neurosis and Patterns related to edge, 218
- Patterns associated with neurosis and related to whole area of tray, 221-4**
- Scattered or Incoherent, 221
- Disordered, 221
- Patterns, relation to tray (Eu-type general categories:)**
- Group one: Single Patterns free in area, 71
- Group two: Patterns with relation to edge, 77

- Group three: Patterns essentially related to edge making use of whole area, 80
- Group four: several small Patterns within area, 83
- necessity of noting in Eu-type, 159
- Patterns, relation to tray (Am-type general categories):**
- (1) related to whole area of tray, 94-8
 - Multiform, 94; Composite, 96; Diffuse, 98; Collective, 98;
 - (2) Single, free in area, 98-102
 - Designed Slab, 99; Simple Slab, 101
- Concept of space in Am-type Patterns, 285, 293, 295, 297
- Pelletier, Andrée, 278
- Pendant Patterns (see Eu-type 70-84)**
- description of, 80
 - appearance of in eleven year old children, 130
 - absence of in sub-normal intelligence, 144
 - association with neurosis, 220-1
 - dependence upon environment in makers of, 221
- Pieces, mode of use of (Compact, Spaced Intermediate), 70**
- three-dimensional use of, 70
 - Am-type, 101
 - Dimensions of, 333
 - colours of, 33, 37
- Plate 1: 52 f, 107, 121
- Plate 2: 54, 63
- Plate 3: 54, 61, 63
- Plate 4: 54, 63, 224
- Plate 5: 54, 61, 62
- Plate 6: 54, 60, 197, 224
- Plate 7: 156, 187, 189-90 (history of maker)
- Plate 8: 55, 60, 63
- Plate 9: 55, 63, 130
- Plate 10: 55, 61, 62, 88
- Plate 11: 56, 60, 159, 224
- Plate 12: 54, 57, 60, 188, 224, 225
- Plate 13: 58, 224, 225
- Plate 14: 59, 198, 226
- Plate 15: 54, 60
- Plate 16: 60, 65, 197, 224, 329
- Plate 17: 60, 63, 134, 216, 230, 334
- Plate 18: 64, 190, 191, 227
- Plate 19: 65, 190, 191, 227
- Plate 20: 65, 190, 192, 227
- Plate 21: 66 (description of)
- Plate 22: 70, 72, 85, 88, 156, 161, 162 (description of), 164, 168, 174, 176, 179
- Plate 23: 70, 72, 85, 88, 161 (description of), 162, 163, 164, 165, 231
- Plate 24: 70, 73, 85, 88, 178, 198, 232 (interpretation)
- Plate 25: 70, 74, 85, 86, 88, 165, 170, 304
- Plate 26: 74, 85, 87, 156, 163-7 (description of), 168, 170, 283, 284, 285, (description of), 286, 294, 304
- Plate 27: 70, 74, 156, 159, 165, 169, 171, 293
- Plate 28: 70, 74, 85, 180, 298
- Plate 29: 70, 74 (discussion of), 97, 167, 180, 183
- Plate 30: 75, 85, 180, 193 (history of maker), 230
- Plate 31: 76, 222 (description of)
- Plate 32: 76, 231
- Plate 33: 76, 85, 88, 223 (description and history of maker), 298
- Plate 34: 70, 76, 91
- Plate 35: 76, 85, 228
- Plate 36: 70, 77, 85
- Plate 37: 73, 77, 79, 208 (description and history of maker), 213, 215, 218, 232, 234
- Plate 38: 172, 221, 223
- Plate 39: 82 (discussion of), 214-5 (discussion of), 216
- Plate 40: 83 (discussion of), 186
- Plate 41: 84, 85, 289
- Plate 42: 84
- Plate 43: 72, 85, 88, 179, 180, 230
- Plate 44: 87, 306
- Plate 45: 88, 91
- Plate 46: 88, 89, 182, 198, 300
- Plate 47: 88, 89, 182, 229 (history of maker), 300
- Plate 48: 70, 89, 182, 228, 300
- Plate 49: 90, 298
- Plate 50: 90, 302
- Plate 51: 94, 283, 289, 291, 292
- Plate 52: 94, 95, (description of), 283, 284, 285, 286, 291, 292, 300
- Plate 53: 94, 95 (description of), 283, 290, 291, 293
- Plate 54: 95, 291, 292, 300
- Plate 55: 95, 292, (description of)
- Plate 56: 95, 293
- Plate 57: 96 (description of), 97, 293, 294
- Plate 58: 96 (description of), 97, 294, 295
- Plate 59: 97, 293, 294
- Plate 60: 97, 295, 311
- Plate 61: 97 (description of), 295, 296
- Plate 62: 97, 217, 296
- Plate 63: 98
- Plate 64: 98, 221, 296
- Plate 65: 100, 101, 297, 299, 300
- Plate 66: 100, 101, 297, 299, 300
- Plate 67: 100, 301
- Plate 68: 101
- Plate 69: 101, 115
- Plate 70: 102, 302
- Plate 71: 102, 302

Plate 72: 140
 Plate 73: 77, 112
 Plate 74: 51 f, 113, 116 (description of), 124
 Plate 75: 115, 140
 Plate 76: 107, 116
 Plate 77: 118 (description of), 123
 Plate 78: 120
 Plate 79: 120, 324
 Plate 80: 85, 121
 Plate 81: 122 (description of)
 Plate 82: 88, 124
 Plate 83: 88, 107, 131, 182
 Plate 84: 130, 161, 162, 164, 182, 307
 Plate 85: 76, 131
 Plate 86: 132 (description of), 235
 Plate 87: 132-3 (description of)
 Plate 88: 133 (description of), 235
 Plate 89: 133-4 (description of), 235
 Plate 90: 55, 134 (description of)
 Plate 91: 55, 134 (description of), 235
 Plate 92: 134 (description of), 135, 235
 Plate 93: 55, 135 (description of)
 Plate 94: 135 (description of), 235
 Plate 95: 119, 141, 143
 Plate 96: 144, 147
 Plate 97: 59, 144, 150
 Plate 98: 171, 172, 173 (description of), 198
 Plate 99: 70, 184, 197
 Plate 100: 26, 55, 63, 187
 Plate 101: 152, 173, 199 (description of)
 Plate 102: 152, 173, 199, 201 (description of), 203
 Plate 103: 173, 199, 202 (description of)
 Plate 104: 204 (description of), 329
 Plate 105: 206, 327
 Plate 106: 206, 327
 Plate 107: 211 (description of), 213, 233, 338
 Plate 108: 212-3 (description of), 233, 324
 Plate 109: 215-6 (discussion of), 233
 Plate 110: 134, 216 (discussion of), 234
 Plate 111: 218
 Plate 112: 224
 Plate 113: 224 (description of), 234
 Plate 114: 156, 226, 233 (description of)
 Plate 115: 233
 Plate 116: 235
 Plate 117: 235
 Plate 118: 236
 Plate 119: 236
 Plate 120: 226
 Plate 121: 228
 Plate 122: 229
 Plate 123: 230 (history of maker)
 Plate 124: 150, 214, 242 (history of maker)

Plate 125: 244 (history of maker)
 Plate 126: 247 (history of maker)
 Plate 127: 247
 Plate 128: 26, 193, 249 (history of maker)
 Plate 129: 55, 57, 188, 254 (history of maker)
 Plate 130: 254-5 (history of maker)
 Plate 131: 111, 261 (history of maker)
 Plate 132: 115, 140, 262 (history of maker)
 Plate 133: 111, 140, 263 (history of maker)
 Plate 134: 112, 140, 263 (history of maker)
 Plate 135: 264 (history of maker)
 Plate 136: 59, 119, 150, 266
 Plate 137: 269 (history of maker)
 Plate 138: 270 (history of maker)
 Plate 139: 272 (history of maker)
 Plate 140: 26, 276 (history of maker)
 Plate 141: 279 (history of maker)
 Plate 142: 280 (history of maker)
 Plate 143: 315, 317, 324
 Plate 144: 28, 300, 303, 317
 Popular Patterns, description of, 85
 in sub-normal intelligence, 143
 Post-encephalitic syndromes, use of L.M.T. in diagnosis of, 246-7
 Prefundamental Patterns, examples and description of, 117
 Reimañ, Dr, 308
 Record Form, 29, 40, 72, 77
 Up to 1953, 339-42
 After 1954, 29
 Repetitive Patterns (*see Eu-type 70-84*)
 description of, 76
Representational Designs:
 classification of, 50-64
 definition of, 50
 classes of:
 direct representation of external objects, 53-56
 houses, 54; persons and faces, 54;
 flowers and trees, 55; scenes, 55;
 transport, 55; machinery etc. 55;
 animals, 55; letters or figures, 55;
 use of natural objects to form decorative designs, 56
 Representation of phantasy or symbolic figures or scenes, 57-59
 Story Reaction, 58; Delusional Dissociated Reaction, 58-9; *Bizarre Representational Designs, 59;
 Individual characteristics of, 59-64
 movement, 59-60; colour, 60-61;
 skill, 61-64
 planning in, 65-67
 construction of, 66
 in the development of children, 120-1
 infrequency of in seven year old

children, 125-128
 types of in nine year old children, 129
 types of in ten year old children, 130
 difference between those of rural and urban school children, 130
 few examples among thirteen year old children, 131
 large examples of in fourteen year old children, 132
 examples of in development of nine and three quarters, 134
 of in development of boy, and a half, 135
 in responses of men-
 sub-normal in-
 vidual person-
 errors in
 fract Pat-
 unsuccessful
 ns and neu-
 option of,
 early stage of, 2
 Rorschach test, 23, 147, 186, 227, 228, 250, 256, 278, 328
 Ruddy, Dr Mary, 239
 Schaffhausen Mental Hospital, 243, 252, 268, 279
 Schwarz, Lenora, 303, 317, 327
 Self Portrait, 26, 451
 analysis of a design as a, 193-5
 see *symbolic self-representation*, 246-7
 Simon, Hermann, 277
Schizophrenia:
 problem of diagnosis in certain cases of, 146
 paranoid schizophrenia, diagnosis of, 242
 specific value of L.M.T. in the study of, 255-7
 modification of technique in study of, 257
 supersymmetry and, 91, 257
Schizophrenics:
 expression of grandiose ideas by, 64
 common characteristics in responses of children, mental defectives and, 106
 relation between developmental Stages 1 to 4 in children and the responses of, 110-111
 comparison of individual lines of development in children and in, 111-114

Drawing Materials: Reaction and, Representational Designs in, 116
 difference in responses of sub-normal intelligence and, 141
 degrees of regression in, 258-266
 Fourth Degree, 258-60; Third Degree, 260-1; Second Degree, 261-4; First Degree, 264-6
 schizophrenic way of life, 265-6
 Story Reaction and, 267-9
 The Autistic Circle and, 272-3
 Artistic Designs and, 273-7
general comment on the L.M.T. and, 277-81
Simple Designs (see also skill in Representational Designs, 61-4)
 description of, 62
 very small Simple Patterns (Eu-type) indicative of extreme inhibition, 227
Slab Patterns:
 characteristics of, 98
 colour in, 101-2
 significance of in Eu-type Patterns, 99, 297
 simple Slabs in development of children, 115
 Greater complexity of in Stage 7 in development in children, 118
 in sub-normal intelligence, 142
 Centralised Patterns with major errors classed as, 216
 neurotic example of, 217
 further study of Am-type Slabs needed before discrimination possible, 332
Slab Patterns, Simple:
 description of, 101
 difficulties of distinguishing between Designed Slabs and, 101, 216
 example of and interpretation, 159
 further study of Am-type needed, 332
Slab Patterns, Designed:
 description of, 99, 101
 difficulties of distinguishing between Simple Slabs and, 101, 216
 examples of Am-type discussed, 297-302
 profound difference in American attitude to, 297
 comparison of different aspects in Eu-type and Am-type, 298-302
 further study of Am-type needed, 332
Spaced Patterns:
 description of, 83
 analysis of in normal personality, 175
 interpretation of, 177
 Spitz, 146
Square or Oblong Patterns (see Eu-

type 70-84) (description of, 73
 Standard Patterns, absence of in early development in children, 121
 Star-shaped Patterns (see *Eu-type 70-84*)
 description of, 72
 Stewart, Dr Ursula, 100, 101, 308, 347
 Story Reaction, 51 *passim*
 description of, 58, 139
 clinical groups and the, 267-9
Sub-Normal Intelligence:
 use of L.M.T. in the study of, 136-148
 modifications of standard administration in the study of, 137-8
 comparison of Abstract Patterns in normal children and in subjects of (*form*), 139-43
 pairs and edge groupings in, 140
 Fundamental Patterns in, 141
 Collective Patterns in, 141-2
 Elaborated Fundamentals in, 142
 Slabs in; rarity of Patterns using whole area of tray in, 143
 (*colour*), 143-4
 Representational Designs in, 144-5
 factor of maturation in, 145
 problem of neurosis in, 146
 problem of differential diagnosis in, 146
 importance of *mode* of production in, 146
 factor of practice in, 146
 problem of excellent designs in, 147
 problem of anti-social individuals in, 147
 Symbolic self-representation, 246-7
 Szondi test, 256
 Tangential Pattern, 159
 T.A.T., 153, 356
 Terman-Merrill test, 106
 Tester:
 training of, 44-6
 analogy with qualities of musician, 48
 familiarity with whole range of Designs essential in, 48
 need for tester to define his purpose, 49
 Three-dimensional Patterns:
 description of, 91
 superimposed, 92
 layered, 92
 frequency of use in Am- and Eu-type Patterns, 103
 piling in Patterns, 103, 307
 difference between Am- and Eu-type, 302
 Traumatic brain damage, use of E.M.T. in diagnosis of, 242-4
 Tree test, 255

Triangular Patterns (see *Eu-type 70-84*):
 description of, 73-5
 description and interpretation of three Triangular Patterns, 165-71
 significance of in normal personality, 180
 Twins, designs made by, 327
 U.S.A. (see also *Am-type Patterns*, *Abstract Patterns without Form*, *Form and Cultural Process*, *L.M.T. in the study of*)
 significance of history of when interest in history of discussion in, 180 (history of constructions)
 limited (story of maker)
 made (story of maker), 150, 266
 thrus (history of maker)
 si (history of maker)
 api (history of maker)
 v (history of maker)
 rel (history of maker)
 280 (history of maker)
 fr (history of maker)
 300, 303, 317
 fre (history of maker)
 normal intelligence, 143
 O (history of maker)
 in diagnosis of, 246-7
 ab (history of maker)
 i (history of maker)
 abs (history of maker)
 Multiform Patterns particular to, 94
 piling in Patterns in, 103
 Diffuse Pattern made by subject from, 98
 significance of Slab-Patterns in subjects from, 99
 different interpretation of Designs in, 158
 frequency of white in Designs from, 231
 Unusual Patterns (see *Eu-type 70-84*):
 description of, 77
 Unsuccessful Patterns:
 Abstract, 214-7
 Representational, 218-8
 Vivid Designs (see also *skill in*, *Representational Designs 61-4*):
 description of, 63
 Vocational Guidance, value of L.M.T. in, 151, 329
 Wertham, Frederic, 91, 240, 241, 246, 257, 264, 278, 280, 345
 Winged Patterns (see *Eu-type 70-84*):
 description of, 76
 significance of in Stage 10-development of children, 121
 in twelve year old children, 131
 in sub-normal intelligence, 144
 indicative of possibilities of neurosis, 222

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